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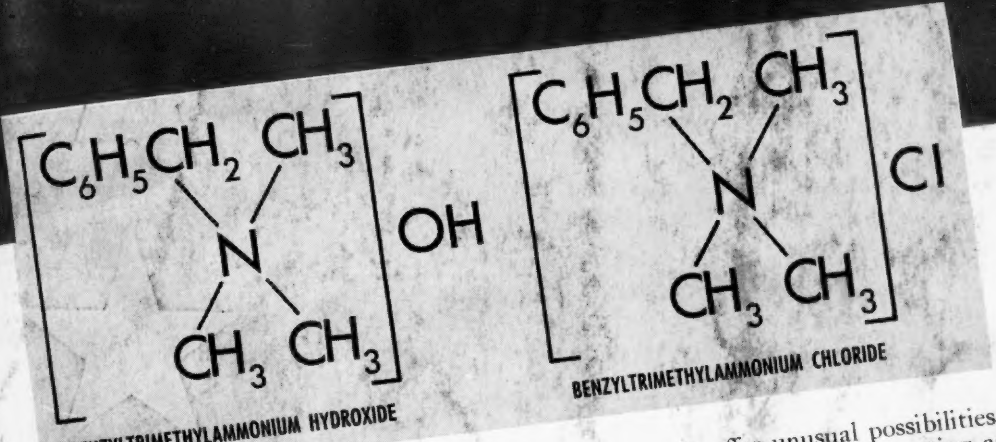
CHEMICAL INDUSTRIES

The Chemical Business Magazine



These two quaternary ammonium compounds offer unusual possibilities both for direct use and in the synthesis of such materials as textile chemicals, wetting agents, and other organic complexes:

BENZYLTRIMETHYLAMMONIUM HYDROXIDE

This is one of the most powerful organic bases known. It is highly dissociated in water and readily forms salts with both inorganic and organic acids. Its aqueous solutions dissolve cellulose, suggesting numerous applications in textile industries.

Benzyltrimethylammonium Hydroxide is stable up to 50° C—but decomposes at higher temperatures into benzyl alcohol and trimethylamine. Thus it has special value as an alkaline catalyst, since it can easily be decomposed and removed after it has served its purpose. Available in a 42% solution.

BENZYLTRIMETHYLAMMONIUM CHLORIDE

A neutral salt, highly soluble in water . . . the anhydrous material is stable up to about 200° C—but with further heating it decomposes to form benzyl chloride and trimethylamine. Offered in a 60% solution.

Limited quantities of these materials are available. Samples will be supplied on request.

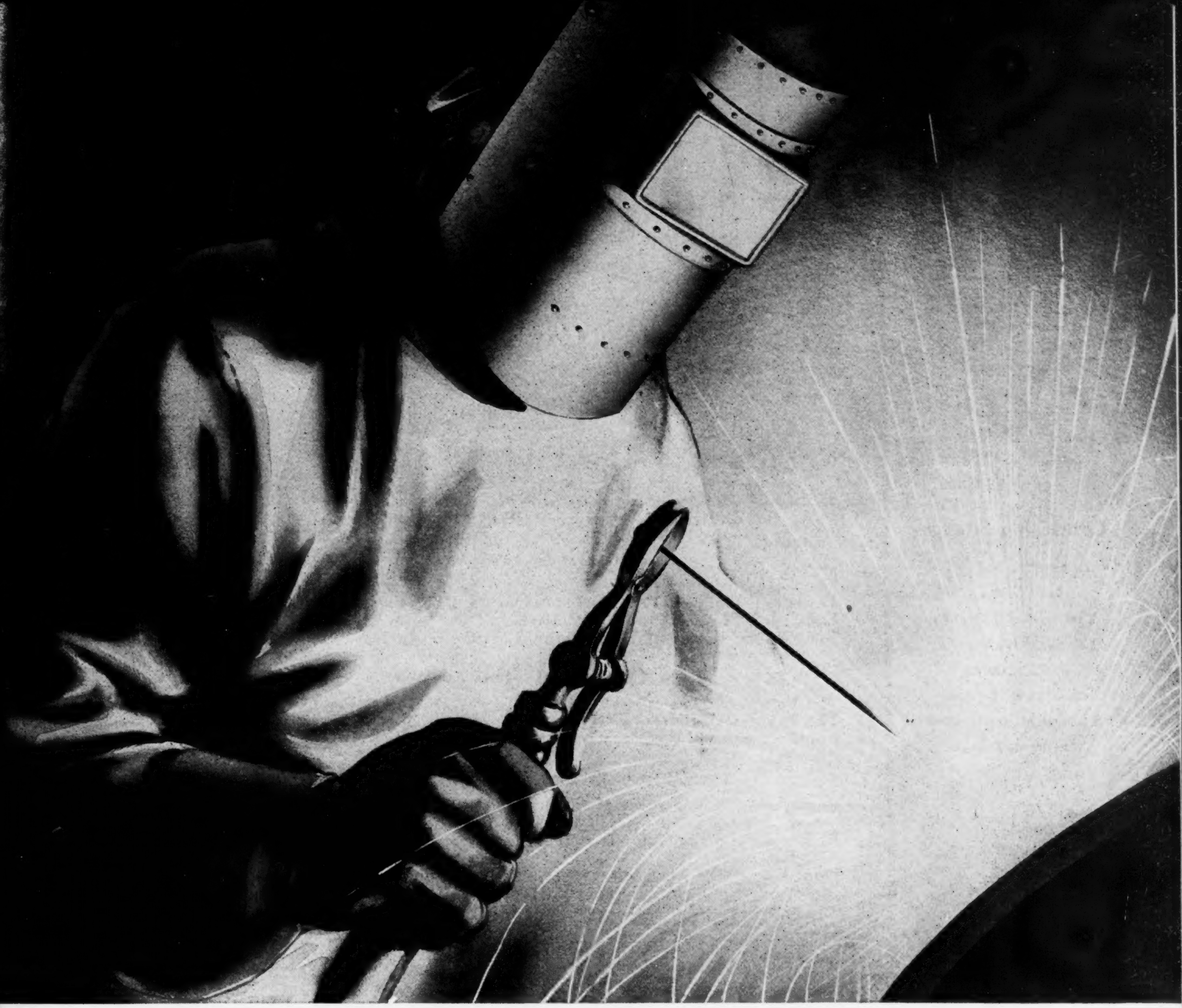
The textile industry is but one of many which are finding important uses for the benzyltrimethylammonium compounds.

THE BENZYLTRIMETHYLAMMONIUM COMPOUNDS
Properties of Aqueous Solutions

	Hydroxide	*Chloride*
Concentration, % by wt.	42-44	60-62
Specific gravity, 20°/20°C	1.07	1.07
pH (0.1 M Solution)	12.3	7.4
Refractive index, 20°C	1.444	1.472
Freezing point, °C	<-10	<-50
Boiling point, °C	112 d.	d.

COMMERCIAL SOLVENTS
Corporation
17 EAST 42nd STREET, NEW YORK, N. Y.

Soda Ash is a weapon
Solvay Soda Ash has its
in the Victory Program
important basic material
the manufacture of equipment
other products for our armed
Listed below are a few of the
essential war materials
with the help of Solvay Soda
ORDNANCE
CHEMICALS
GLASS
PETROLEUM
ADHESIVES
SOAP
ALUMINUM and other METALS
PLASTICS
TEXTILES
LEATHER
CLEANSERS
PAPER
SOLVAY SALES CORPORATION Alkalies and Chemical Products Manufactured by The Solvay



Chemical Coatings for
STRONGER WELDS

Welding electrodes are coated with metal oxides and silicates to control the melting rate, to improve arc stability, to exclude oxygen and nitrogen from the arc stream, to reduce splatter and to improve the physical properties of the weld. To a large extent, the chemical coating controls the density and strength of the weld.

Essential element in most welding electrode coatings is Seawater Magnesium Oxide produced by Westvaco Chlorine Products Corporation. This very-specialized use of Seawater Magnesium Oxide is but one more example of how Westvaco Chemicals are benefiting war production in fields far removed from the chemical industry.

Westvaco CHEMICALS

WESTVACO CHLORINE PRODUCTS CORPORATION

405 LEXINGTON AVENUE • NEW YORK, N. Y.

The Business Magazine for Makers & Users of Chemicals

Management, Research, Production, Marketing

CHEMICAL INDUSTRIES

Publication Staff

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Paul B. Slawter, Jr.
Assistant Editors

Consulting Editors

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L. W. Bass
Frederick M. Becket
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Offices

New York: 522 Fifth Avenue, Murray Hill 2-7888
Chicago: 309 West Jackson Boulevard, Harrison 7890
San Francisco: 420 Market Street, Exbrook 6029
London: Quadrant House, 55-58, Pall Mall, London, S. W. I., Whitehall 6643

Business Staff

Advertising Representatives

New York
William B. Hannum, Jr.
L. Charles Todaro

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A PIONEER THEN—

A LEADER TODAY

IN 1892, in a Virginia valley noted for its vast deposits of pure salt, Mathieson began the construction of the first of three great factories. Over a period of half a century, they were to supply America's growing industries with vital chemicals. Today—fifty years later—the Mathieson plants at Saltville, Va., Niagara Falls, N.Y. and Lake Charles, La., are working twenty-four hours a day to supply the nation's *war* industries with the "raw materials of victory."

This is the over-all picture of a typically American enterprise—The Mathieson Alkali Works. It is a story of growth and progress in chemical research... in developing new products... and in devising more efficient methods of handling and transporting chemicals.

Among Mathieson's early achievements was the development of the Castner electrolytic cell for producing chlorine and extremely pure caustic soda. The first to make bleaching powder in the United States, Mathieson pioneered the manufacture of synthetic ammonia, liquid chlorine and such outstanding chlorine products as calcium hypochlorite and sodium chlorite. Chlorine, today in great demand for war production, is also safeguarding the health of our fighting men on all fronts as calcium hypochlorite, the *mobile* chlorine carrier.

These are but a few milestones in the fifty years of Mathieson Chemicals. They are tangible evidence of the drive and initiative which have marked Mathieson's rise from modest beginnings to a place of leadership in the field of industrial chemicals.

CELEBRATING 50 YEARS OF SERVICE TO AMERICAN INDUSTRY AND PUBLIC HEALTH

MATHIESON CHEMICALS

The Mathieson Alkali Works, (Inc.) **60 East 42nd Street, New York, N. Y.**

THE READER WRITES

German Oil Situation

Your columns have contained considerable information from time to time concerning the German oil situation and the possibility that the German war machine may be stopped ultimately by lack of fuel. I think there are some interesting points which you may have overlooked that have a bearing on the subject.

There are two factors which make it much less likely that Hitler will be stopped by lack of engine fuel than is popularly believed. The first is the development in Germany of synthetic oil and substitutes, which are vital in that country because of limited oil supplies but which, of course, are not considered in any discussions of engine fuels in the United States because of our great reserves. The second is the remarkable development of the diesel engine in that country.

On my last visit to Germany, I had the opportunity, because of my connection with The Cooper-Bessemer Corporation, to investigate the production of diesel engines and the manufacture of fuels. Thousands of diesel engines were being constructed in Germany even then—for installation in tanks, trucks, tractors, trains and airplanes. In Germany, the diesel aircraft engine, as you perhaps know, is a reality and thousands of Hitler's planes are thus powered. This application of the diesel engine principle to the German war machine has resulted in a tremendous saving of fuel—and has upset the calculations of many "experts."

As you know, the work done by a diesel engine per gallon of fuel, whether it is to propel an airplane, pull a train, or dig a ditch, is about one and one-half to two times as much as that done by an automobile engine. In addition, the fuel is much cheaper.

But the above facts are rather widely known. The development of synthetics and substitutes in the Axis countries is the factor which really upsets the calculations of those who believe that the answer to the entire problem is merely a matter of adding up the total productions of the various oil fields under Nazi domination and then dividing the result by a figure representing the fuel consumption of the German military organization per day.

By the beginning of 1939, a tax of 51 cents a gallon had been imposed in Italy on gasoline and a 36 cent tax in Germany. The reason? To encourage the development of synthetic and substitute fuels. There also were direct subsidies. At that time, about one quarter of all motor vehicle transportation in the Axis countries was accomplished with synthetic or substitute fuels.

Gasoline made from coal gases was widely used. Alcohol made from vegetables was blended with straight gasoline. There were experiments with ammonia and acetylene. Some 25,000 vehicles in Europe used compressed gases as fuel. The German motorist, who had to pay 60 cents a gallon for gasoline, could use city gas at a price equivalent to 43 cents a gallon. Forty-one cents worth of methane also took him as far as a gallon of gasoline. Propane-butane fuel was more expensive—equivalent to 61 cents a gallon —but one tank full took the motorist some 225 miles.

Other substitutes for gasoline and oil are oil made by hydrogenation, pulverized coal suspended in oil and oil "cooked" from corn, wood, algae, seaweed, leaves and similar substances in combination with limestone.

It is logical to assume that the rapid growth of synthetics and substitutes in Germany has been accelerated by the war. Although facts are hard to obtain since the war began, on either the diesel engine development in Germany or the synthesis of fuel, it appears to me that enough is known for those who predict an early defeat for Hitler on the basis of fuel exhaustion to be more cautious.

B. B. Williams,
President,
The Cooper-Bessemer Corp.,
Mt. Vernon, Ohio.

New Uses for Salt

In your March, 1942, "We—Editorially Speaking," you mentioned I apparently overlooked one possible use of salt in my article, "Salt As A Chemical Raw Material," which appeared in the November and December, 1941, issues.

That was my baby but it was not born yet when I wrote my article. Dr. Turner did not do this work until January 8th but we had been talking and writing about it for many months back. I might have mentioned the possibility of salt being effective for controlling magnesium bomb fires but there was nothing at that time to warrant such a statement.

Many thanks just the same for calling attention to the use of salt for controlling magnesium bomb fires. There are many uses for salt not mentioned in my article, some new—some old, some small—some large, for example, salt is now used to coagulate synthetic rubber latex and the uses for salt and the products made from it are legion.

C. D. Looker,
Director of Research,
International Salt Company,
Ithaca, N. Y.

Sulfur Oil and Sullfonation

Editorial Note: We quote from two letters received on the subject of a statement recently made in "The American Balance Sheet of Oils and Fats."

Page 622 of the May '42 issue states in column two under subject of Olive Oil:

"The sulfur oil and the foots are employed in making sulfonated oil products."

We have imported for many years both the olive oil and sulfur oil or foots and our experience has been that the sulfonators were the large users of olive oil, and of course some olive oil was used for making castile soap, but very little, if any, of the sulfur oil or foots was used for sulfonation insofar as we know. Its chief use was the production of the so-called green foots soap.

Perhaps you will want to check into this matter, further to make the necessary correction if a mistake was made in your article.

The writer has just returned from a vacation and finds on his desk your letter of July 10th and notes, in connection with our correspondence on the subject of sulfur oil, or olive oil foots, that you intend to quote on the Reader's Page of the August issue the expert's report as quoted in your letter. In making this report he evidently was unaware of the fact only sulfur oil was under discussion, as sulfur oil is not obtained by the alkali refining method. We understand that certain oils, like cotton seed, peanut, etc., are alkali refined, but in the case of sulfur oil, commonly known in the trade as olive oil foots, it is obtained by the extraction of the remaining oil in the olive pulp with the aid of carbon bisulfide, benzol or some other solvents. Olives are subjected to pressure and the olive oil obtained is sold for edible as well as commercial purposes which includes sulfonation. After all the free oil is removed by pressure the remaining oil is extracted from the pulp with the solvents mentioned.

A. Reisch,
Secretary,
E. M. Sergeant Pulp & Chemical Co.,
New York, N. Y.

Attention Government Agencies

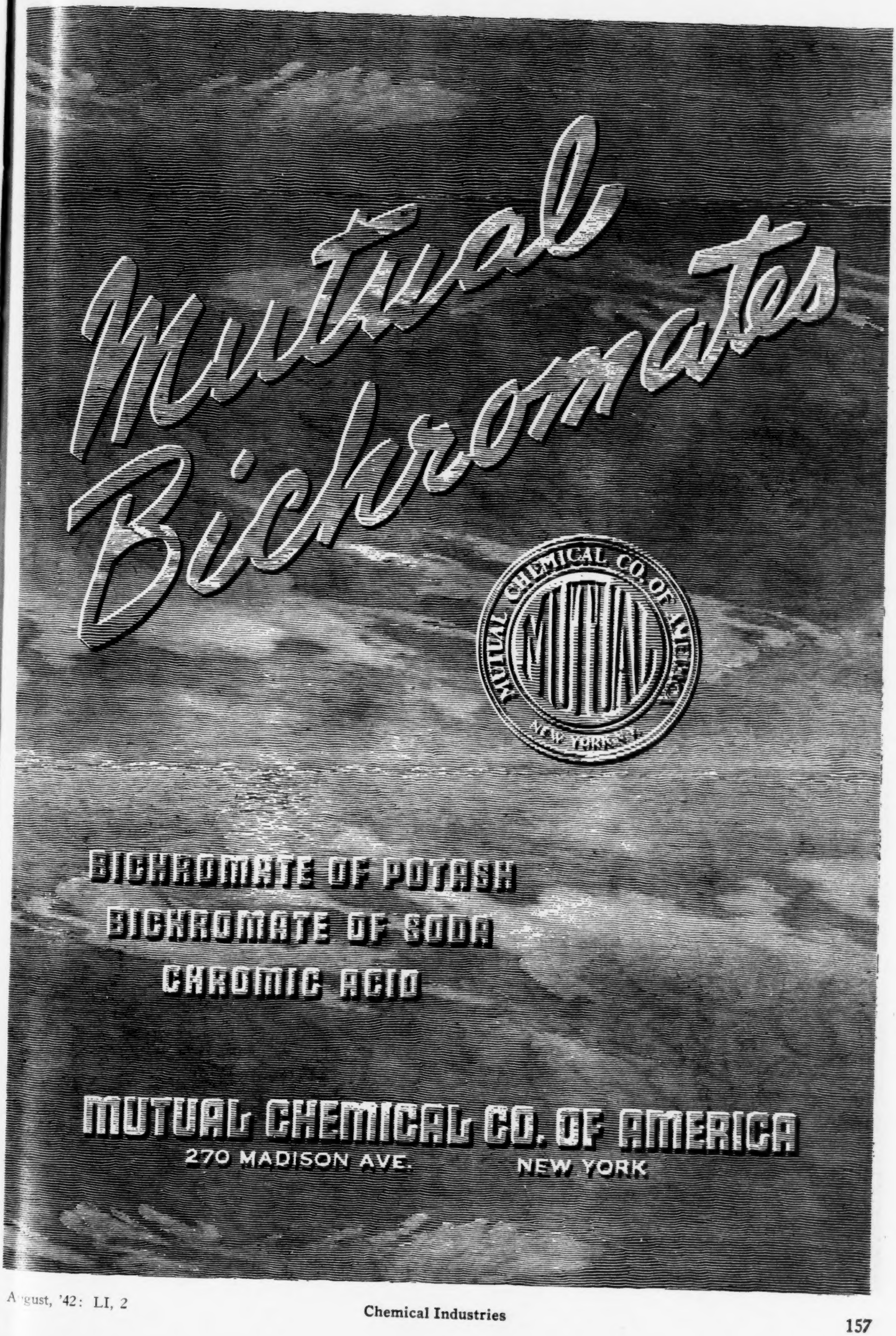
Like many other little fellows, we're still doing business but—

In other words we're in trouble and are turning to you for any possible information you can give us.

In order for us to remain in business we will have to get some of the government orders. We are ideally situated to produce most any type of speciality oils, such as machine gun oil, rust preventatives, etc.

We see bids coming through but to date have been unable to get any definite information regarding government specifications on these. Would it be possible

(*Continued on page 262*)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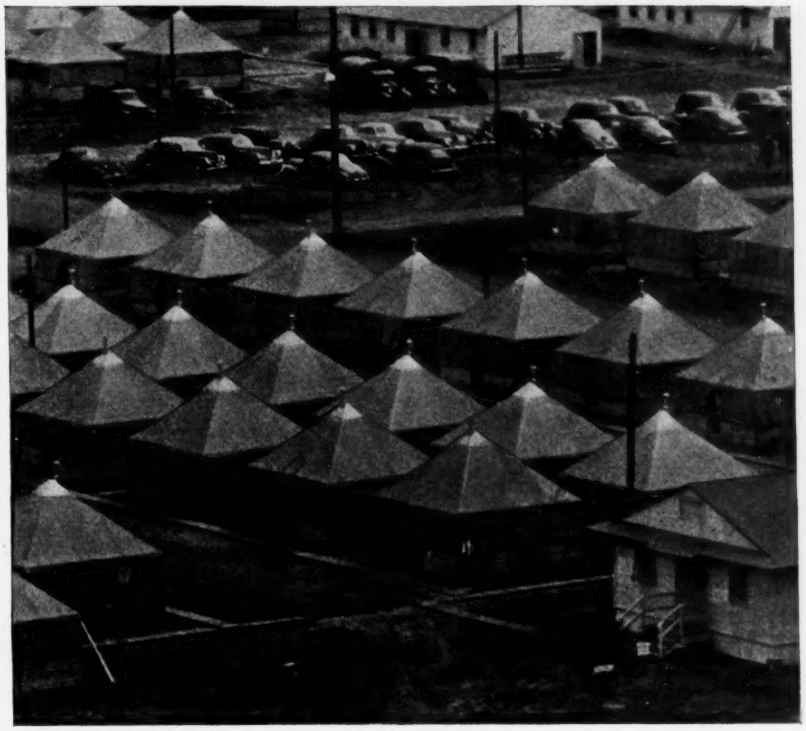
MUTUAL CHEMICAL CO. OF AMERICA
MUTUAL
NEW YORK
BICHROMATE OF POTASH
BICHROMATE OF SODA
CHROMIC ACID
MUTUAL CHEMICAL CO. OF AMERICA
270 MADISON AVE. NEW YORK

Life ON THE CHEMICAL NEWSFRONT

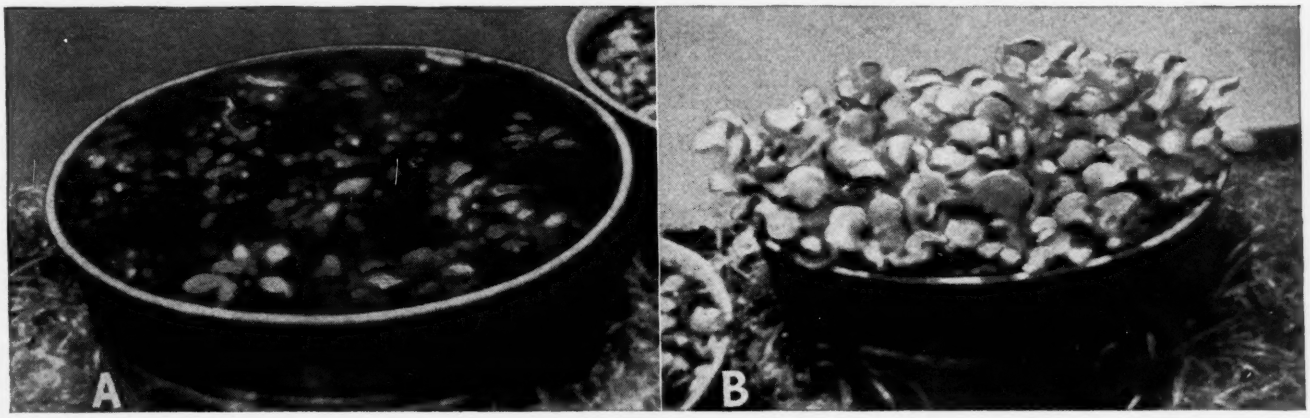
(*Above*) **WEAPONS FOR VICTORY** are pouring forth from industry's production lines in ever-increasing quantities. *Your* purchase of War Bonds and Stamps *regularly* will help speed the flow of these materials to our boys on the fighting fronts.

(*Below*) **LOW-COST PLASTER MOLDS** are winning favor for the casting of many types of parts in which dimensional accuracy and good as-cast surface are desirable. Aid in the production of the plaster molds is the use of AEROSOL* OT 100%, Cyanamid's unusually powerful wetting agent, in the parting compound sprayed on the flask to prevent sticking of the mold and to facilitate removal.

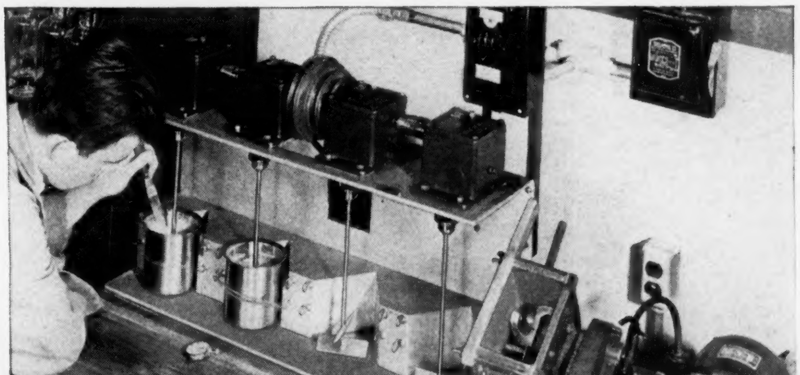
(*Right*) **CANVAS CITIES FOR THE NATION'S ARMIES** call for huge quantities of fabric, all of which must be dyed to the exact mineral khaki shade required by government specifications. In dyeing canvas or other fabrics for tents, tarpaulins, and other Army materiel (except clothing), manufacturers find that Cyanamid's Black Iron Liquor and Acetate of Chrome are extremely helpful in obtaining the correct shade to meet specifications. They find, too, that Cyanamid's quantity production of these materials aids them in maintaining their manufacturing schedules. Cyanamid offers technical assistance on the correct use of Black Iron Liquor and Acetate of Chrome.



(*Below*) **FLOATING PLANT PESTS** are now being controlled by chemical means. Recent experiments conducted by Dr. A. A. Hirsch of the Department of Education, State of Louisiana, demonstrate that growth of the water hyacinth, which frequently chokes lakes and rivers in the South, can be checked by small quantities of sodium pentachlorphenate. Photo A shows plants treated for two weeks with 80 parts per million of this compound. B shows the growth of untreated plants. Concentrations as low as 10 parts per million are sufficient to effect a marked reduction in plant growth.



(*Right*) **NEW SYNTHETIC RESINS,** now being produced by Cyanamid from less critical materials, help manufacturers to meet the demand for protective coatings for civilian use. Photo shows preparation of color mixes in the laboratories at Cyanamid, where synthetic resin research is being constantly carried on to make available new and improved materials for the coatings industry. Among the latest products of Cyanamid research are new REZYL* Resins designed for use in architectural white enamels and baking enamels. These new non-phthalic alkyd resins are more readily available than other materials of a similar type. Further details on their properties and formulation into protective coatings are available on request.



American Cyanamid & Chemical Corporation

30 ROCKEFELLER PLAZA · NEW YORK, N. Y.

WASHINGTON

By T. N. Sandifer

WHETHER or not a new revenue bill will be forced through Congress on top of the pending unprecedented measure before the Senate Finance Committee, and later, the Senate, at this time, little room for doubt exists that there will be higher taxes in the coming year than even at present.

The clear intimation from Administration spokesmen on the matter can be read in what Secretary of Treasury Morgenthau has revealed of his own approach to the problem. While conceding that in the current fiscal year about half of the national income is going for the war effort, he has stressed to members of Congress that only 37 per cent of all fiscal 1943 Government expenditures would be financed by taxation, either Federal, State or local; and he made it plain that he would like to close the margin between this figure and the comparable proportion of taxes to outgo for war reported in other associated nations.

T. N. Sandifer

He cited Canada, financing about 70 per cent of its war effort through taxation, and the United Kingdom, 44 per cent.

"Quite frankly," he says, "I do not see why we should not do at least as well as Great Britain and Canada."

That statement should be convincing to anybody as to what Administration leaders have in mind. If not, there is Morgenthau's openly expressed opposition to curtailing one cent of what is loosely termed in Washington as "war expenditures" and this opposition means Congress must find the money for them, if it agrees with his view.

The only counter to this trend in the Administration at present is a developing bloc in Congress, represented lately by Senator Tydings in addition to a number of conservative Democratic Senators and House members, which is beginning to look twice at items marked "War."

Broadly speaking, everything Washington does can be lumped as part of the war effort from an Administration and bureaucratic viewpoint, and a certain hardihood is called for on the part of anyone who challenges such a claim in behalf of any activity. When the war started, as an instance, there was a tremendous hue and cry from the War and Navy departments for parking areas for the cars of those on duty in these buildings.

From the beagling heard for miles from those departments, one could only conclude that if they did not get this space right then, another Pearl Harbor would be the least ensuing consequence; it was all the National Parks and Planning authorities could do to restrain them from grabbing what little remains of Washington's once beautiful parks, for the purpose.

Finally they were given a huge polo field near the departments, a beauty spot since before World War I, and this was paved at a cost of $115,000. Now, six months later, the huge acreage of paved field is so little used that the Government is about to tear up this paving and use the material elsewhere, leaving an ugly stretch of abandoned ground.

True, $115,000 is pin-money in a war effort costing 77 billion dollars, so are the amounts used for air transportation out of Washington and over the country, for all sorts of purposes. But the air transport companies, as well as others, have good reason to know that a considerable part of this travel might well be on the rails, even if it is not actually unnecessary in more cases than the public will ever know. But these would all be called "war activities" around Washington.

Finally, it is no secret that the War Department, among others, has been prodigal in drawing in shoals of workers, mostly girls, for which nobody in the department apparently has the slightest idea of immediate useful employment. All these are isolated, and perhaps picayune items, but cumulatively, they add to war costs for which the public is being urged to sacrifice. Sooner or later, of course, somebody will demand a more practical conception of actual war effort, and insist on the war being fought for what it is, a grim struggle for life.

Meanwhile, it is noteworthy in connection with the Administration approach to the whole question of taxation that taxes are highly regarded by its spokesmen, still, as an antidote to inflation. This pre-occupation with heavy taxation as a major remedy can be seen constantly in such statements as that of Mr. Morgenthau recently, when he observed that while by themselves, they cannot win the battle against inflation, taxes are an "essential anti-inflationary weapon that must be used to the utmost."

WPB Realigned

Among developments apart from this potential, is the "realignment" of the War Production Board recently. This has not affected the Chemical Branch, but it can be forecast that an enlargement by adding a number of new divisions is about to take place, probably before this appears, pointing to the increasing importance of this agency.

Dr. Ernest W. Reid, Chief of the Chemicals Branch of WPB, taking a scientific approach to the various issues over proposed chemical methods, and competing chemical processes, late in July appointed a committee of outstanding American chemists and chemical engineers to advise the War Production Board on technical processes. The committee will be headed by Dr. Donald B. Keyes, University of Illinois.

The mission of the committee, Dr. Reid stated, would be to pass upon the relative merits of such processes involved in the war effort, particularly the questions of which process can be most readily placed in production, and which use the least amount of critical materials.

Membership in the committee, which includes three past presidents of the American Chemical Society, four councillors and two directors, and all of whom are recipients of numerous honors in the chemical field, is as follows:

Dr. Keyes, who is head consultant to the Branch and is professor of chemical engineering at the university; Dr. Marston T. Bogert, Belgrade Lakes, Me., emeritus professor of organic chemistry, Columbia University; Dr. Joel H. Hildebrand, Berkeley, Calif., Dean College of Chemistry, University of Calif.; Dr. S. C.

(Continued on page 244)

THIS WILL *Always* BE!

Wonder of the Western World—Niagara Falls has been called. And not by accident but apparently by design is it located here in America. Its thunder is the thunder of a people who have strength and happiness in freedom. Its movement is the restless, surging movement of men who feel a deep compulsion to go forward in history. Its power is resistless—and cannot be stemmed.

Those pioneers who first glimpsed the stately grandeur of Niagara saw in its rainbow the promise of a new world where peace and opportunity could be found. The rainbow is still there, and the peace and opportunity which America has given to millions are treasured beyond price. In a world where freedom is being crushed, Niagara symbolizes everything which this country means—strength, abundance, steadfastness. It is a limitless fountainhead of power which can be transformed into energy that brings good to all.

We who work within sight and sound of Niagara Falls are devoting every ounce of our energies and facilities to speeding the flow of Chemicals for Victory.

CAUSTIC POTASH · CAUSTIC SODA
PARA · CARBONATE OF POTASH
LIQUID CHLORINE

FROM THE ORIGINAL BY ADOLF DEHN . . . IN NIAGARA ALKALI COMPANY'S COLLECTION OF PAINTINGS OF NIAGARA FALLS

EBG NIAGARA ALKALI COMPANY

Niagara ALKALI COMPANY
60 EAST 42nd STREET, NEW YORK, N. Y.

LA
NE
TIM
FOR

FARM BLOC RUBBER BILL VETOED

Washington, August 8

In fighting words President Roosevelt vetoes bill designed to set up separate agency to develop ways and means of producing synthetic rubber from alcohol produced from agricultural and forest products. President's move appointing three man fact-finding committee, consisting of Bernard M. Baruch, Dr. James B. Conant, President of Harvard, and Dr. Karl T. Compton, M.I.T. President, universally hailed by press of the nation. Conant and Compton are noted scientists, fearless and fully capable. Baruch inspires confidence.

TO SUPPLY TRAINED PERSONNEL

Washington, August 10

Paul V. McNutt, Chairman, of the War Manpower Commission reports business establishments engaged in war work will be assisted in difficult problem of locating chemists, engineers, metallurgists, etc. U.S. Employment Service is finding out how many employees of these types, war production plants will require before end of '42 and during '43. McNutt plans to use Roster of Scientific and Professional Personnel, likewise names of scientifically trained persons who have registered in the draft. McNutt promises that teaching profession will not be "raided". Plant-to-plant canvasses now being made.

DISTRIBUTORS LICENSED

Washington, August 6

OPA (Supplementary Order No. 11) licensed distributors of chemicals, drugs, etc., effective August 11. All such organizations must register with OPA. Copies of order available from OPA. To quote "Distributor means any person who receives delivery of any chemicals or drugs subject to a price regulation specified in paragraph (b) and resells it (whether as jobber, agent, dealer, broker, or any similar person or as an importer or broker) without substantially changing its form. Repackaging, relabeling, diluting, blending or mixing, without more, shall not be deemed to constitute a substantial change of form. . ."

WPB PLANS RESEARCH BUREAU

Washington, August 10

Nelson to ask Congress for one hundred million to establish Office of Technical Development. Agency specifically to work on rubber, drugs, substitutes for natural raw materials now largely imported, foods, transportation. OTD will not conflict with existing research agencies. Plans to "farm out" certain research projects. Plan still in formative stage with considerable uncertainty that the Hill will supply funds.

MONSANTO GETS JOINT "E"

St. Louis, August 10

Monsanto notified its executive branch St. Louis and plants at Monsanto, Tenn., and Anniston, Ala., were selected for joint Army-Navy production award "representing recognition by both Army and Navy of especially meritorious production of war materials."

HERCULES' BOND DRIVE
Wilmington, August 6
More than $300,000 monthly now being subscribed for war bonds and stamps by 22,000 men and women employees at 73 plants. July figures, as yet incomplete, indicate a company-wide increase of about three percent in number of employees subscribing.

KUTZ (DU PONT) HONORED
Wilmington, August 3
Milton Kutz, who started as office boy 45 years ago (now assistant to general manager of du Pont's Electrochemicals Department) given testimonial dinner by associates. Engraved mahogany clock presented by Colby Dill, special assistant to general manager. Thomas Coyle as toastmaster introduced among others Dr. E. A. Rykenboer, Charles L. Wiswall, August Heuser, L. M. White, S. C. Harris, Morell Marean, Dr. H. J. Barrett.

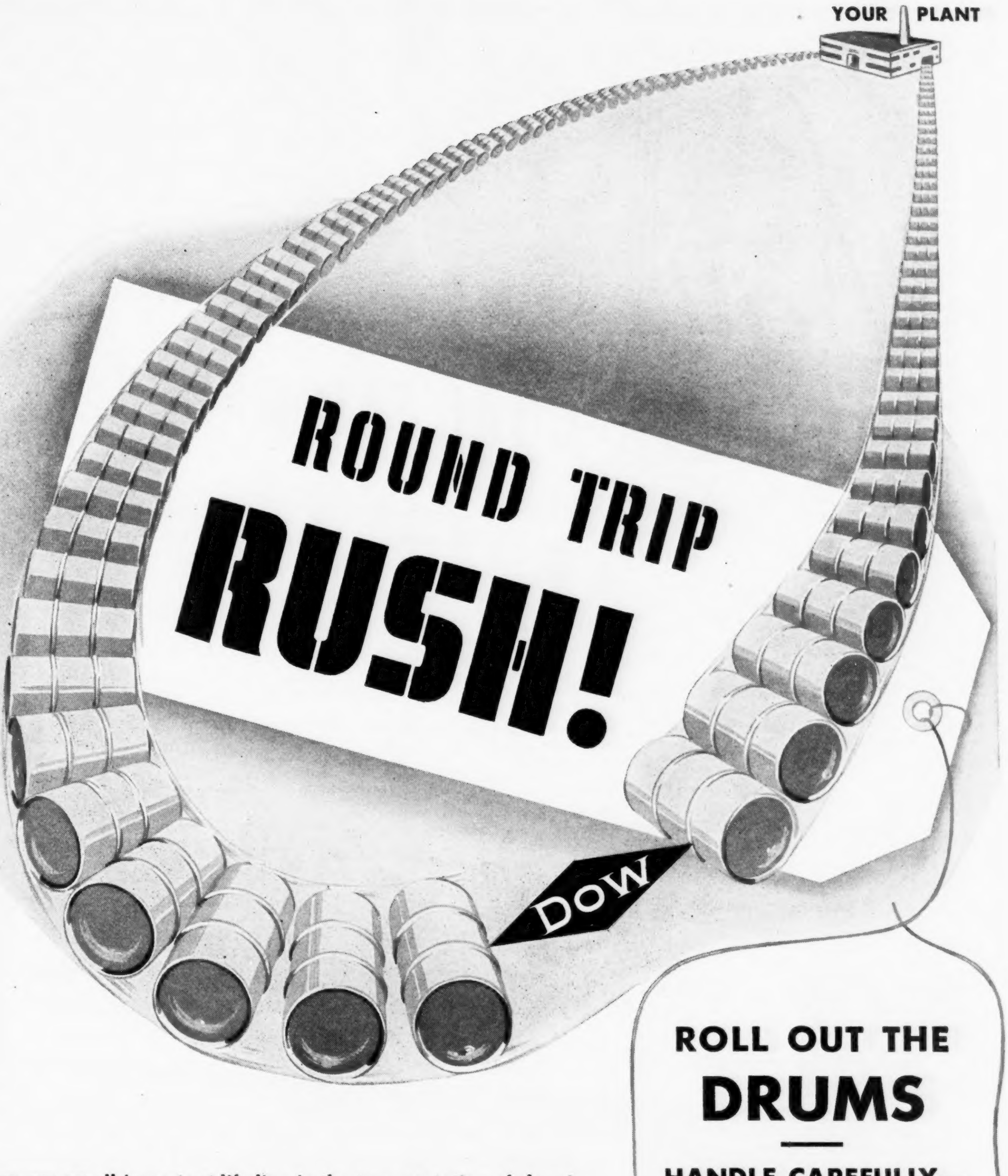
NAM PREPARES FOR POST WAR PROBLEMS
Washington, August 10
W. P. Witherow (Blaw Knox President) and president, National Association of Manufacturers, selects committee headed by S. Bayard Colgate, Chairman of the Colgate-Palmolive-Peet, to prepare practical program for postwar activities and guide to member companies in meeting conditions when the war is over. Executives will find considerable food for thought in suggested program, a veritable check-list of what and what not to do.

HUGH RICE DIES SUDDENLY
Brooklyn, August 6
Hugh M. Rice, Manager, Chemical Sales Division, Phelps-Dodge, and very popular member of the chemical industry, stricken with fatal heart attack.

PLASTICS INFORMATION
North Tonawanda, N.Y., August 11
Durez Plastics & Chemicals, Inc., Walck Road, North Tonawanda, N. Y., issues non-technical discussion of manufacture of plastics from the raw materials to finished products. Contains brief review of recent books and suggests sources for further comprehensive study.

GRIMM NEW INDUSTRIAL ALCOHOLS CHIEF
Washington, August 10
WPB Chemicals Branch announces appointment of Richard H. Grimm as Chief of Industrial Alcohols Unit. New appointee started with American Distilling, becoming President in '23. In '28 he became President American Commercial Alcohol, formed by merger of his and other companies. Retired in '33. Was President Industrial Alcohol Institute in '35.

SPECIAL:-
ARE NEW YORK CITY CHEMICAL COMPANIES, INCLUDING THOSE ENGAGED IN MANUFACTURE OF COATINGS, COSMETICS, ALL TYPES OF CHEMICAL SPECIALTIES, FINDING IT DIFFICULT TO GET WAR CONTRACTS? WRITE THE EDITOR THIS PUBLICATION YOUR EXPERIENCES. DEPARTMENT OF COMMERCE, CITY OF NEW YORK, IS HELPING MANUFACTURERS IN OTHER FIELDS BUT FIRST MUST KNOW IF SERIOUS PROBLEM EXISTS AND MUST HAVE ACTIVE INDUSTRY COOPERATION.



ROLL OUT THE
DRUMS

HANDLE CAREFULLY—
EMPTY AND RETURN
PROMPTLY

DRUMS ARE AN all-important life line in the transportation of chemical materials. Today, this life line faces a crisis—for our present national supply of drums *must* be made to do the big job ahead.

That means everyone of us must do his part to "Roll out the drums." When drums arrive at your plant, make sure they are handled carefully. Empty the contents as soon as you can. Don't use drums for other material. Don't even rinse them. Be sure to replace the bungs and tighten securely. Then, keep those drums moving on a rush round trip—many round trips.

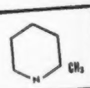
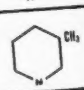
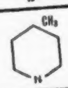
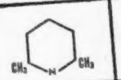
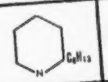
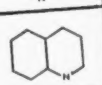
Do it today—and every day—*for VICTORY.*

THE DOW CHEMICAL COMPANY • MIDLAND, MICHIGAN

New York • St. Louis • Chicago • San Francisco • Los Angeles • Seattle • Houston

Reilly
COAL TAR PRODUCTS

COAL TAR BASES

	FORMULA	PURITY	DIST. RANGE	LBS. PER GALLON	SOLUBILITY IN WATER	SOLUBILITY IN ALCOHOL	SOLUBILITY IN HYDRO-CARBONS
Pyridine		97.5%	2°C including temperature of 115.5°C	8.2	Soluble	Soluble	Soluble
Alpha Picoline		99%	2°C including temperature of 129.3°C	7.9	Soluble	Soluble	Soluble
Beta Picoline		90%	2°C including temperature of 144.2 °C	8.0	Soluble	Soluble	Soluble
Gamma Picoline		95%	2°C including temperature of 145.0°C	8.0	Soluble	Soluble	Soluble
2,6-Lutidine		98%	2°C including temperature of 143.8°C	7.7	Soluble	Soluble	Soluble
2-Hexyl Pyridines		98%	8°C including temperature of 227.0°C	7.5	Very Slightly Soluble	Soluble	Soluble
Quinoline		98%	2°C including temperature of 237.3°C	9.15	Very Slightly Soluble	Soluble	Soluble

A Dependable Source of Supply for All Coal Tar Products

With unusual production and delivery facilities, plants in 17 strategic locations, and offices in major cities, Reilly offers a complete line of coal tar bases, acids, oils, chemicals and intermediates. Booklet describing all of these products will be mailed on request.

REILLY TAR & CHEMICAL CORPORATION

Executive Offices: Merchants Bank Building, Indianapolis, Indiana

2513 S. DAMEN AVE., CHICAGO, ILL. 500 FIFTH AVE., NEW YORK, N.Y. ST. LOUIS PARK, MINNEAPOLIS, MINN.

SEVENTEEN • PLANTS • TO • SERVE • YOU

New

POLY-PALE RESIN

Harder, Higher-Melting, yet Retains Substantially the Full Acidity of Rosin

HERCULES Poly-Pale Resin should improve the quality of products designed for glossy, hard finishes, for adhesives, stiffeners, driers, polishes, and other products in which rosin is normally used.

This new Resin has a high viscosity, high melting point, and low oxygen absorption. It resists crystallization in solution, and in metal resinates shows a high content of metal for improved drying action.

Poly-Pale Resin may well answer some of your problems caused by the shortcomings of rosin, or by scarcity of other types of resins, shellac and similar materials.

We will be glad to send you information in detail, or to ship a sample for your own experimental purposes.

PROPERTIES

Melting Point (drop)	98-103°C. (208-217°F.)
Melting Point (ring and ball)	92-94°C. (198-201°F.)
Acid No.	152-156
Saponification No.	157-160
Color (U. S. Standard)	WG-X
Refractive Index at 20°C.	1.5440
Specific Rotation (solid)	+ 40°
Petroleum Ether Insoluble	7
Ash	0.01%
Viscosity—60 percent in toluene (CTS)	20
Density (at $\frac{25°C.}{25°C.}$ against water)	1.0740

NAVAL STORES DEPARTMENT

HERCULES POWDER COMPANY

Incorporated

WILMINGTON · DELAWARE

LL-72

Dyes for Dental Therapy, Too!

In the long list of National Aniline products is a beneficent dye—Acriviolet. Used only in minute quantities, it has been widely adopted by the dental profession as a specific for certain forms of gingivitis and trench mouth as well as to prevent infection after extractions.

Acriviolet and its application to dental therapy is one of many activities of National Research, the same research that constantly widens the usefulness of our Dyestuffs, Biological Stains and Indicators, Certified Food, Drug and Cosmetic Colors, Synthetic Organic Chemicals for coating resins, Synthetic Detergents, Anti-Skinning Agents for paints and other unique products.

Consult National Technical Service concerning their application to your problems.

NATIONAL ANILINE DIVISION

ALLIED CHEMICAL & DYE CORPORATION

40 RECTOR STREET **NEW YORK, N. Y.**

BOSTON	150 Causeway St.	SAN FRANCISCO	517 Howard St.	NEW ORLEANS	Masonic Temple Bldg.
PROVIDENCE	15 Westminster St.	CHARLOTTE	201-203 W. First St.	CHATTANOOGA	James Bldg.
CHICAGO	357 W. Erie St.	GREENSBORO	Jefferson Standard Bldg.	PORTLAND, ORE.	730 West Burnside
PHILADELPHIA	200-204 S. Front St.	ATLANTA	140 Peachtree St.	TORONTO	137-145 Wellington St., W.

Synthetic Organic Chemicals

PRODUCED BY

CARBIDE AND CARBON CHEMICALS CORPORATION

These synthetic organic chemicals serve all industry. Each group offers a wide range of properties. Because of the current demand for most of these products, the supply may be limited for the duration of the war.

Alcohols
- Methanol
- Ethanol
- "Synasol" solvent
- Isopropanol
- Butanol
- Methyl Amyl Alcohol
- 2-Ethylbutanol
- Hexanol
- Heptanol-2
- 2-Ethylhexanol
- Undecanol
- Tetradecanol
- Heptadecanol

Glycols
- Ethylene Glycol
- Diethylene Glycol
- Triethylene Glycol
- Polyethylene Glycols
- Propylene Glycol
- Dipropylene Glycol

Ethers and Oxides
- Ethyl Ether (Ethyl Oxide)
- Isopropyl Ether
- Butyl Ether
- Hexyl Ether
- Diethyl "Cellosolve"
- Diethyl "Carbitol"
- Dimethoxytetraglycol
- Dichlorethyl Ether
- "Chlorex" solvent
- Triglycol Dichloride
- Dichlorisopropyl Ether
- Ethylene Oxide
- "Carboxide" fumigant
- Dioxane
- Propylene Oxide

Glycol-Ethers
- Methyl "Cellosolve"
- "Cellosolve" solvent
- Butyl "Cellosolve"
- Phenyl "Cellosolve"
- Benzyl "Cellosolve"
- Methyl "Carbitol"
- "Carbitol" solvent
- Butyl "Carbitol"

Esters
- Ethyl Acetate
- Isopropyl Acetate
- Butyl Acetate
- Methyl Amyl Acetate
- 2-Ethylbutyl Acetate
- 2-Ethylhexyl Acetate
- Methyl "Cellosolve" Acetate
- "Cellosolve" Acetate
- "Carbitol" Acetate
- Butyl "Carbitol" Acetate
- Glycol Diacetate
- Glycol Diformate
- "Flexol" Plasticizer DOP
- "Flexol" Plasticizer 3GH
- "Flexol" Plasticizer 3GO
- Diethyl Sulfate
- Methyl Acetoacetate
- Ethyl Acetoacetate
- Ethyl Silicate

Ketones
- Acetone
- Synthetic Methyl Acetone
- Methyl Isobutyl Ketone
- Methyl n-Amyl Ketone
- Diisobutyl Ketone
- Diacetone Alcohol
- Mesityl Oxide
- Isophorone
- Acetonylacetone

Aldehydes
- Butyraldehyde
- 2-Ethylbutyraldehyde
- 2-Ethylhexaldehyde
- Crotonaldehyde
- 2-Ethyl-3-propylacrolein

Organic Acids
- Butyric Acid
- 2-Ethylbutyric Acid
- Caproic Acid
- 2-Ethylhexoic Acid

Anhydrides
- Acetic Anhydride
- Propionic Anhydride
- Butyric Anhydride
- Maleic Anhydride

Chlorinated Compounds
- Ethylene Dichloride
- "Chlorasol" fumigant
- Propylene Dichloride
- Butyl Chloride
- Dichlorethyl Formal
- Ethylene Chlorhydrin
- Propylene Chlorhydrin

Amines
- Butylamine
- Di-2-ethylhexylamine
- Ethylenediamine
- Diethylenetriamine
- Triethylenetetramine
- Tetraethylenepentamine
- Propylenediamine
- Morpholine
- Monoethanolamine
- Diethanolamine
- Triethanolamine
- Diethylethanolamine
- Aminoethylethanolamine
- Phenylethanolamine
- Phenyldiethanolamine
- Ethylphenylethanolamine
- Triisopropanolamine
- Acetoacetanilide
- 2-Chloracetoacetanilide
- 2,5-Dichloracetoacetanilide
- Acetoacet-o-toluidide
- Phenylmethylpyrazolone
- Tetraethanolammonium Hydroxide

"Tergitol" Penetrants

"Carbowax" Compounds

"Vinylite" Resins
- Polyvinyl Chloride
- Polyvinyl Acetate
- Vinyl Chloride-Vinyl Acetate Copolymer
- Polyvinyl Butyral
- "Vinylseal" adhesives
- "Vinyon" fiber

"Columbia" Activated Carbon

Hydrocarbons
- Methane
- Ethane
- Propane
- "Pyrofax" gas
- Butane
- Isobutane
- Ethylene
- Propylene
- Butadiene

For information concerning the use of these chemicals, address:

CARBIDE AND CARBON CHEMICALS CORPORATION

Unit of Union Carbide and Carbon Corporation • 30 East 42nd Street, New York, N. Y.

The words "Synasol," "Chlorex," "Carboxide," "Flexol," "Chlorasol," "Tergitol," "Carbowax," "Vinylite," "Vinylseal," "Vinyon," "Columbia," and "Pyrofax" are trade-marks of Carbide and Carbon Chemicals Corporation.

HERE'S A SOLUBLE OIL EMULSIFYING BASE *Pre-adjusted* TO YOUR OWN REQUIREMENTS!

Twitchell Base 262-N eliminates adjusting and standardizing difficulties . . . produces superior soluble oils

To simplify your work in blending soluble oils, Emery Industries offers Twitchell Base 262-N, an emulsifying base *tailor-made* for your own requirements—perfectly standardized and adjusted by our laboratory in the same mineral oil you intend to use.

We keep a sample of your mineral oil on file and use it in standardizing each shipment of Twitchell Base 262-N you order.

This saves you time and expense, and assures you of a finished product with the desired emulsifying and flow properties. With Base 262-N, you can produce crystal clear soluble oils that will never settle or become cloudy.

Our laboratory will gladly cooperate with you to meet your particular requirements. *Write for full information.*

FACTS ABOUT TWITCHELL BASE 262-N

- Especially developed for use in making soluble oils for the metal working and cordage industries.
- Adjusted and standardized, before shipment, to your own particular requirements.
- Soluble in mineral paraffin and naphthene base oils, and also in water.
- Produces completely stable soluble oils.
- Easy to use.
- Contains no volatile solvents, therefore soluble oils made with Base 262-N may be exposed to air indefinitely without affecting their emulsifying properties.
- Contains no free inorganic salts—will not cause clouding or settling.
- Shipped in 55-gallon returnable drums, also in 4000, 6000, and 8000-gallon tank cars.

LABORATORY-CONTROLLED THROUGHOUT PRODUCTION
EMERY INDUSTRIES INC.

EMERY INDUSTRIES

INCORPORATED • CINCINNATI, OHIO

New England Office
187 Perry Street
Lowell, Mass.

New York Office
1336 Woolworth Bldg.
New York, N. Y.

Canadian Representative
Canada Colors & Chemicals, Ltd.
Toronto, Ont., Canada

THE *Secret Weapon the Axis Couldn't Understand!*

IT IS an intricate, subtle, highly complex weapon. It is built to tolerances of one ten-thousandth of an inch, yet it's the most rugged and powerful thing in the world. It represents thousands of tons of plans, specifications, blue prints, detail drawings . . . acres and miles of plants built from ground to roof overnight . . . lights burning late in hundreds of thousands of offices and laboratories . . .

It's the mightiest weapon the world has ever known — the secret weapon the Axis couldn't understand — the weapon that will win this war, and win the peace that follows this war.

It's the American way of life and work, the American way of DOING!

BARRETT CHEMICALS FOR INDUSTRY

Phenols • Cresols • Cresylic Acids • Xylenols • Tar Acid Oils • Naphthalene • Phthalic Anhydride • Butyl Phthalate • Cumar (Paracoumarone-Indene Resin) • Rubber Compounding Materials • Pyridines • Barretan* • Pickling Inhibitors • Benzol • Toluol • Xylol • Solvent Naphtha • Hi-Flash Solvent • Hydrogenated Coal-tar Chemicals • Flotation Agents • Anhydrous Ammonia • Sulphate of Ammonia • Arcadian,* the* American *Nitrate of Soda*

*Reg. U. S. Pat. Off.

Barrett

THE BARRETT DIVISION
ALLIED CHEMICAL & DYE CORPORATION
40 RECTOR STREET, NEW YORK

FOR VICTORY BUY UNITED STATES WAR BONDS AND STAMPS

ONE OF AMERICA'S GREAT BASIC BUSINESSES

Available for civilian and wartime needs, FULTON Cotton Waterproof-lined Bags offer manufacturers real protection for a variety of products . . . pre-mixed feeds, sweeping compounds, paints, pigments, oxides, putty, fertilizer, and chemical products. These new bags are waterproof, greaseproof and siftproof, developed to replace the conventional metal and wooden container. In many instances, the use of these cotton bags affords considerable saving in freight and space as their weight and bulk is only a fraction of that of rigid containers.

Our sales engineers will be glad to call upon you with full information.

Write, wire or telephone our nearest branch.

FULTON BAG & COTTON MILLS

Makers of essential cotton products since 1870

Atlanta Minneapolis St. Louis Dallas
New York New Orleans Kansas City, Kans.

FOR FINE CHEMICALS

Glycerophosphates

A complete group of the official and non-official compounds of Ortho-Glycerophosphoric Acid.

CALCIUM GLYCEROPHOSPHATE N. F.
Powder

IRON GLYCEROPHOSPHATE N. F.
Powder

MANGANESE GLYCEROPHOSPHATE N. F.
Powder

MAGNESIUM GLYCEROPHOSPHATE
Powder

POTASSIUM GLYCEROPHOSPHATE
50% and 75% Solutions

SODIUM GLYCEROPHOSPHATE N. F.
Crystals and Powder

SODIUM GLYCEROPHOSPHATE SOLUTION
50% and 75% Solutions

GLYCEROPHOSPHORIC ACID
25% Solution

FINE HEYDEN CHEMICALS

Write for Current Products List

HEYDEN *Chemical Corporation*

50 UNION SQUARE, NEW YORK, N. Y. CHICAGO BRANCH: 180 N. WACKER DR.

SPECIFY HEYDEN

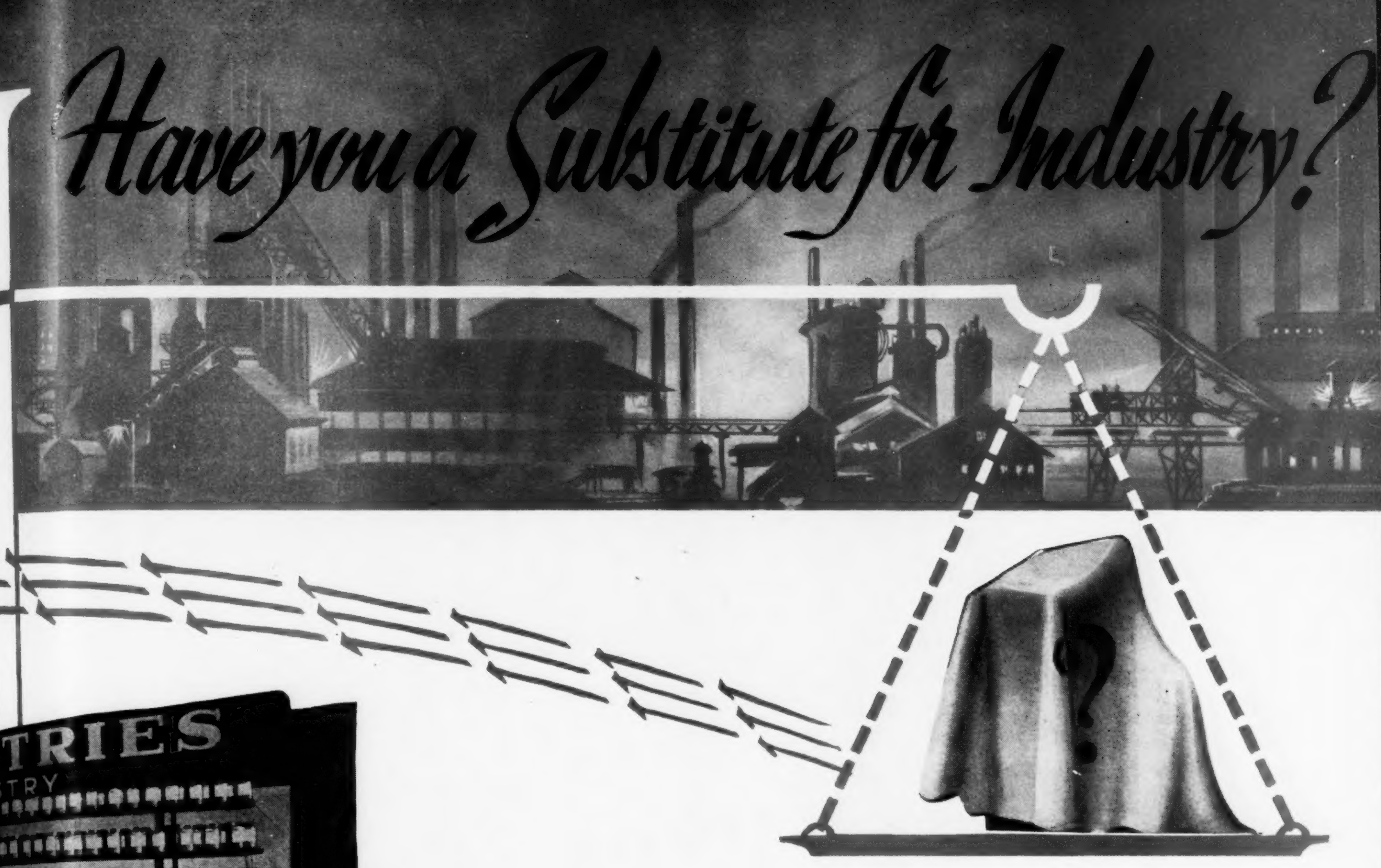
Here is a Substitute for Time!

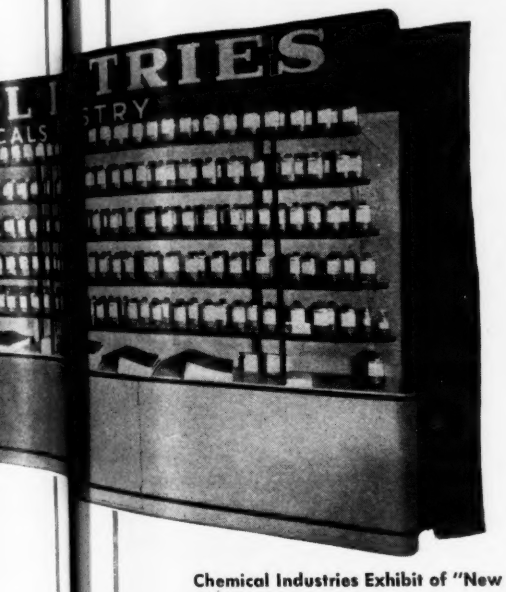
THE NATIONAL CHEMICAL EXPOSITION, to be held November 24-29, at the Sherman Hotel in Chicago, will be the focal point of attention of research directors, chemists, engineers, plant managers, and executives, searching for products to aid in the production of many of the vital materials necessary to our war effort. Many of these important executives of the industry will be likewise seeking new products to replace others employed in production of essential civilian goods now scarce or entirely unobtainable. Our display "New Chemicals for Industry," the Special October Exposition Issue of CHEMICAL INDUSTRIES and the Supplement, to be distributed at the National Chemical Exposition, will all serve to save busy executives valuable time in finding the information and the "know-how" they urgently require.

"New Chemicals for Industry" will be displayed at our booth and its products technically described in both the October Exposition issue and the Supplement. It is a complete compilation of the developments in new chemicals by advertisers in CHEMICAL INDUSTRIES and the BUYER'S GUIDEBOOK NUMBER in the last two years.

"New Chemicals for Industry," as displayed at the Expositions held in New York and Chicago and reported in CHEMICAL INDUSTRIES and the Supplements has been hailed as one of the most notable contributions made by a business publication in the chemical and allied fields.

While advertising in the Supplement and participation in CHEMICAL INDUSTRIES "New Chemicals for Industry" display is limited to regular advertisers in CHEMICAL INDUSTRIES or advertisers in the Special October issue, the very low rate of $75.00 for a full page and correspondingly low fractional page rates for the Supplement are a special inducement to you to reach those vital and fast-expanding markets.





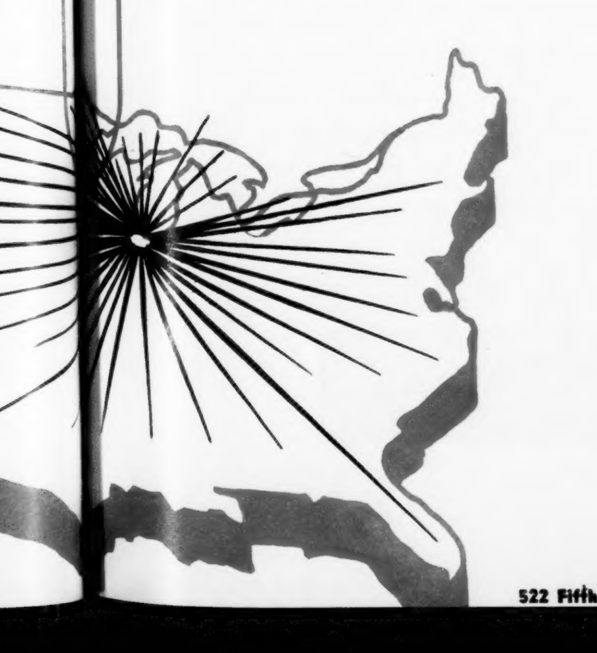
Chemical Industries Exhibit of "New Chemicals for Industry" as they will be displayed at the National Chemical Exposition, Hotel Sherman

War is responsible for a tremendous acceleration in the chemical field. Better goods . . . new goods . . . cheaper goods, are being produced in every plant. With these typical war time expansions, however, numerous shortages of materials have become acute. Many new products need new chemicals, equipment, scientific apparatus and laboratory supplies that are difficult to obtain. Entirely new chemical industries are being created almost over night—witness the synthetic rubber industry designed to produce 870,000 tons—greater than the volume of natural rubber formerly imported annually from the Far East—yet somewhere, somehow, the raw materials and equipment for this and other rapidly expanding branches of the chemical industry must be found. You as a manufacturer are performing miracles by creating substitutes and improvising equipment and scientific apparatus to insure an Allied Nations' victory.

The men who will attend the National Chemical Exposition will be looking for specific information from you to help solve their problems. Due to war restrictions, it is not always possible for those directing war time activities to broadcast "feeler" inquiries. The Exposition offers just the chance these men need—a chance to locate the right source.

Whether you display your products at the Exposition or not, tell these men what materials you have to offer by using the advertising pages of CHEMICAL INDUSTRIES and the Special Exposition Supplement. Your story will reach—not only the highly selected executive type of CHEMICAL INDUSTRIES reader, but will also go to 10,000 men when they carry the CHEMICAL INDUSTRIES Supplement "New Chemicals for Industry" back to their plants.

Place your story where the information will be utilized to the greatest extent. Let CHEMICAL INDUSTRIES tell you how to get the maximum results.



CHEMICAL INDUSTRIES

"The Chemical Business Magazine"

522 Fifth Avenue **309 W. Jackson Blvd.** **420 Market Street**

QUALITY INSURANCE

Today operators of Chemical Processes are taking out a new type of insurance . . . NUCHAR Active Carbon Insurance . . . because this is the most inexpensive, effective way to insure your products against objectionable colors, odors and tastes.

Surprisingly small amounts of NUCHAR Active Carbon will aid you in attaining the highest quality standards, uniformity and stability for your products. By replacing older purification processes or by use in conjunction with existing purification methods, NUCHAR Active Carbon has improved the quality standards of a long list of chemicals and pharmaceuticals, frequently at a reduced operating cost.

INDUSTRIAL CHEMICAL SALES

DIVISION WEST VIRGINIA PULP & PAPER COMPANY

230 PARK AVENUE NEW YORK CITY	35 E. WACKER DRIVE CHICAGO, ILLINOIS	748 PUBLIC LEDGER BLDG. PHILADELPHIA, PA.	844 LEADER BLDG. CLEVELAND, OHIO.

An activated aid to processing **DARCO** REG. U. S. PAT. OFF. *An active aid for purity specifications*

More and more
you will hear the question:–

What IS Activated Carbon?

DARCO ACTIVATED CARBONS are contributing to chemical processes in so many ways today that we're frequently asked, "What *is* activated carbon, anyhow, and what does it *do*?"

Activated carbon is a purifying agent which works by *ad*sorbing impurities.

If you soak up some tea in a sponge, and squeeze it out again, it's still tea. That's *ab*sorption. But if you mix a little DARCO Activated Carbon in the tea, stir it up, and then filter out the DARCO, the resulting liquid isn't tea any more. Color, odor, and flavor have been attracted and trapped by the carbon particles so that they can't get back in the solution. Then, when you filter out the DARCO, these "impurities" are removed.

That's *ad*sorption; and on a much larger scale, it's what DARCO is doing for industry today. By removing color, odor, and many less noticeable impurities from processing liquids, DARCO helps to make a finished product that is purer, hence more saleable. By purifying mother liquors before crystallization, DARCO helps produce crystals more attractive to the buyer's eye.

In short, by aiding processing, DARCO is aiding chemical sales. We'll be glad to discuss the subject with your technical people . . . or to send them the booklet on "Counter-Current Treatment with DARCO." Write for it today.

DARCO Reg. U. S. Pat. Off.

DARCO REG. U. S. PAT. OFF.

DARCO CORPORATION

60 East 42nd Street, New York, N. Y.

★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★

CORROSION PREVENTED!

"Time is of the essence" to-day, and equipment that will give uninterrupted service is essential. ★ ACE rubber lined tanks, tank cars, pipe, pipe fittings, pumps, valves, specialties, etc., offer

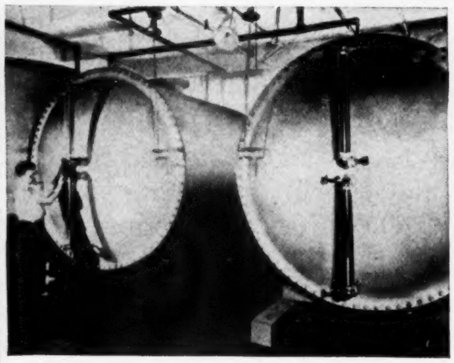
- . . . complete protection against corrosion and contamination
- . . . wide temperature range
- . . . surfaces smooth, non-porous, easily cleaned
- . . . compounds to meet specific service requirements

Let ACE rubber lined equipment help win the battle of production.

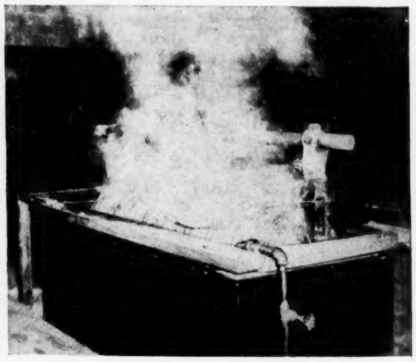
FOR CERTAIN APPLICATIONS

Only HARD RUBBER will do!

Engineers who design special moldings should not overlook the fact that Ace hard rubber has a combination of chemical, mechanical and electrical properties not available in any other plastic.



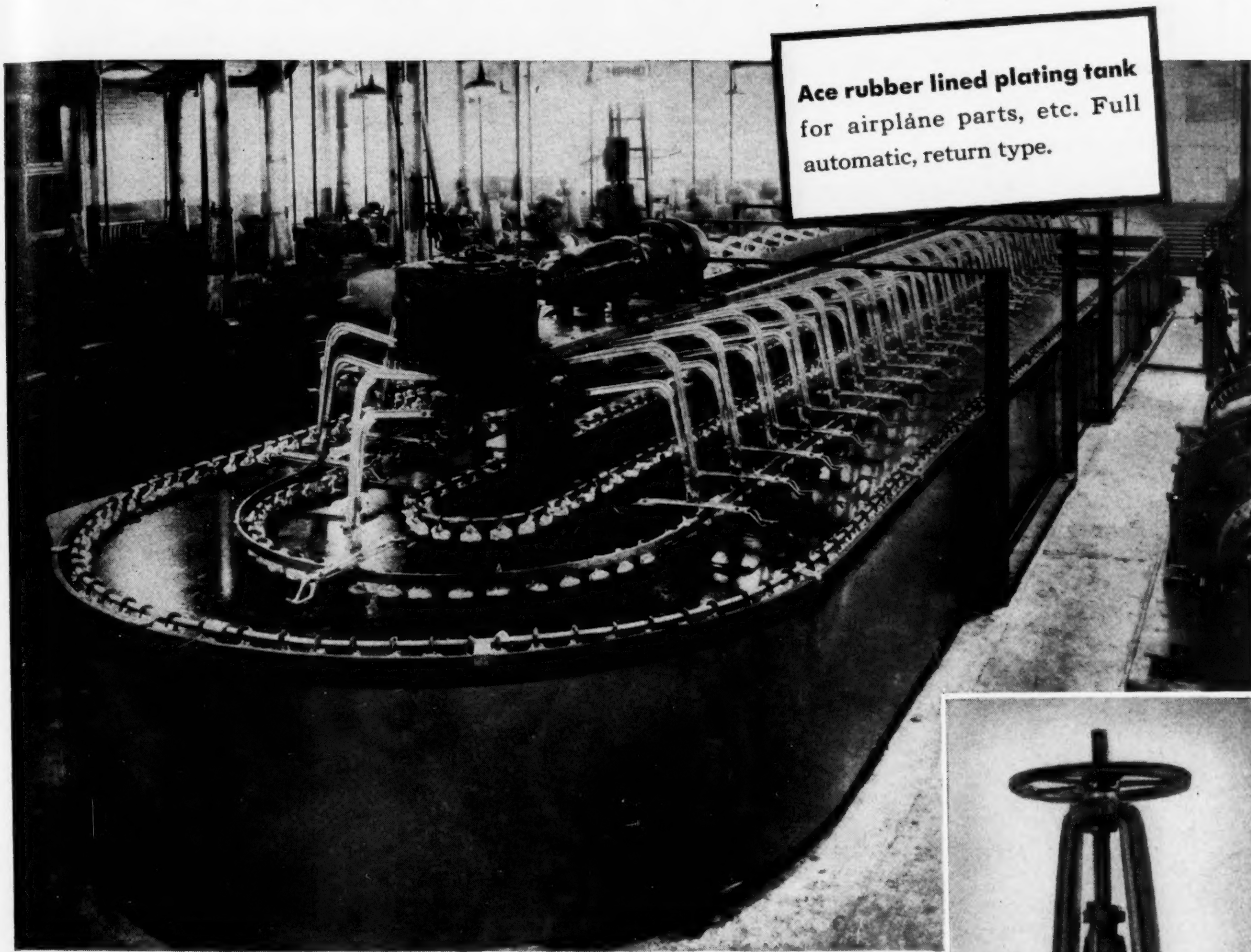
Ace rubber lined storage tanks in any capacity for safety of chemicals.

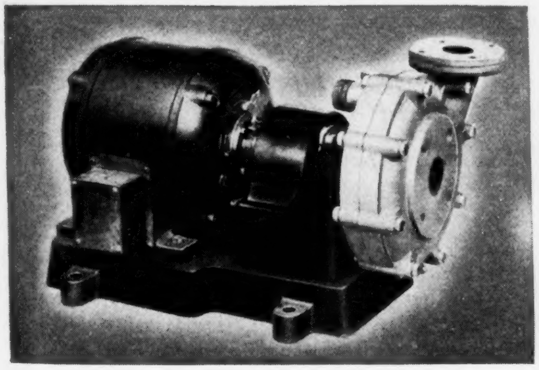


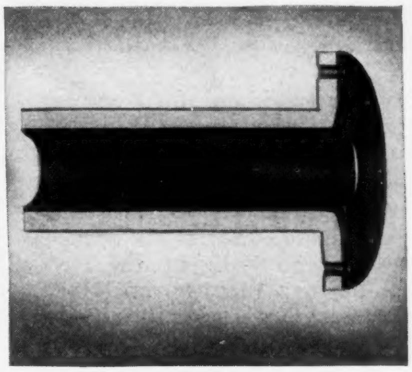
Ace rubber lined pickling tanks are engineered for service.

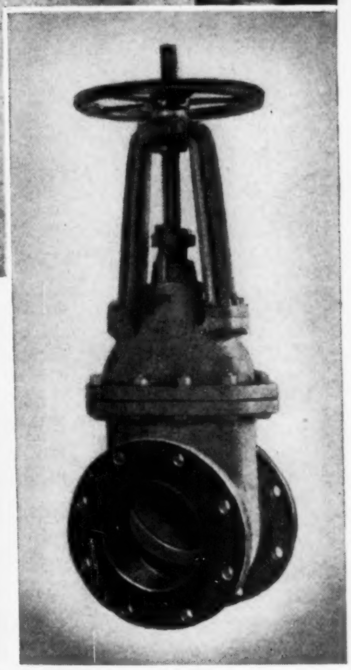
ACE

AMERICAN HARD RUBBER COMPANY, 11 MERCER STREET, NEW YORK, N. Y.









W.A.M. hard rubber Centrifugal Pump. Simplified design. Economical in price—Economical to operate—Economical to maintain. Also Single Acting, Double Acting and Rotary Gear pumps.

Ace rubber lined steel Pipe. Sizes 2 inch up. New lining technique for pipe, fittings and valves makes ends free of restriction.

Ace hard rubber lined Gate Valve. Flanged type with outside yoke and stem. Sizes 2 in. to 20 in. (except $2\frac{1}{2}$, $3\frac{1}{2}$ and 5 in.).

RUBBER PROTECTION

for Defense against Corrosion

AKRON, OHIO 111 WEST WASHINGTON STREET, CHICAGO, ILLINOIS

TO WIN THIS WAR, more and more billions are needed and needed fast—AT LEAST A BILLION DOLLARS A MONTH IN WAR BOND SALES ALONE!

This means a *minimum* of 10 percent of the gross pay roll invested in War Bonds in every plant, office, firm, and factory in the land.

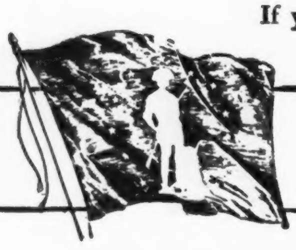
Best and quickest way to raise this money—and at the same time to "brake" inflation—is by stepping up the Pay-Roll War Savings Plan, having every company offer every worker the chance to buy MORE BONDS.

Truly, in this War of Survival, VICTORY BEGINS AT THE PAY WINDOW.

If your firm has already installed the Pay-Roll War Savings Plan, *now is the time*—

1. To secure wider employee participation.
2. *To encourage employees to increase the amount of their allotments for Bonds, to an average of at least 10 percent of earnings—because "token" payments will not win this war any more than "token" resistance will keep the enemy from our shores, our homes.*

If your firm has not already installed the Pay-Roll War Savings Plan, *now is the time to do so.* For full details, plus samples of result-getting literature and promotional helps, write, wire, or phone: War Savings Staff, Section E, Treasury Department, 709 Twelfth Street NW., Washington, D. C.



U. S. War Savings Bonds

This space is a contribution to America's all-out war program by

CHEMICAL INDUSTRIES

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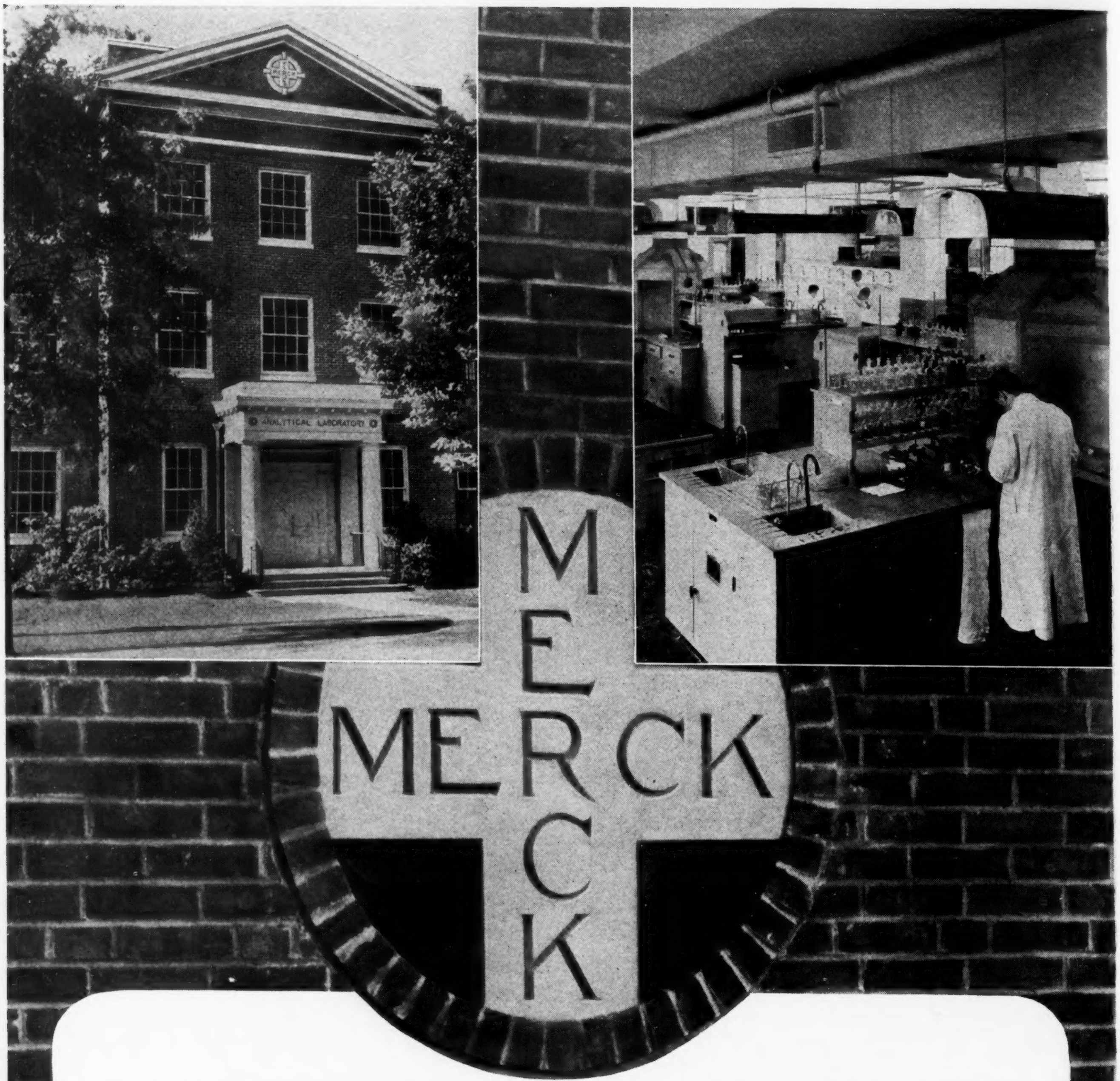

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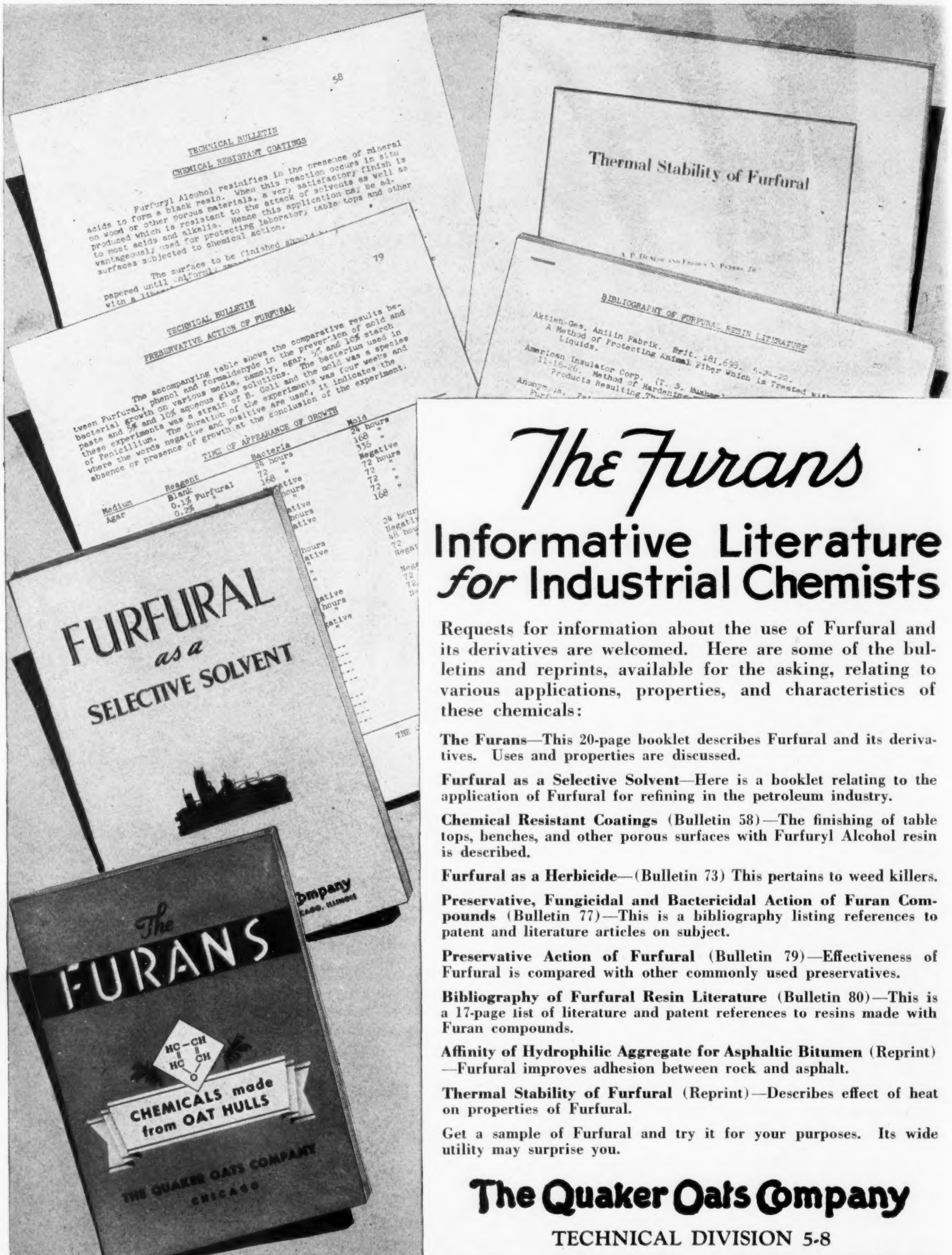

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Informative Literature *for* Industrial Chemists

Requests for information about the use of Furfural and its derivatives are welcomed. Here are some of the bulletins and reprints, available for the asking, relating to various applications, properties, and characteristics of these chemicals:

The Furans—This 20-page booklet describes Furfural and its derivatives. Uses and properties are discussed.

Furfural as a Selective Solvent—Here is a booklet relating to the application of Furfural for refining in the petroleum industry.

Chemical Resistant Coatings (Bulletin 58)—The finishing of table tops, benches, and other porous surfaces with Furfuryl Alcohol resin is described.

Furfural as a Herbicide—(Bulletin 73) This pertains to weed killers.

Preservative, Fungicidal and Bactericidal Action of Furan Compounds (Bulletin 77)—This is a bibliography listing references to patent and literature articles on subject.

Preservative Action of Furfural (Bulletin 79)—Effectiveness of Furfural is compared with other commonly used preservatives.

Bibliography of Furfural Resin Literature (Bulletin 80)—This is a 17-page list of literature and patent references to resins made with Furan compounds.

Affinity of Hydrophilic Aggregate for Asphaltic Bitumen (Reprint) —Furfural improves adhesion between rock and asphalt.

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RESEARCH

EVEN Pollyanna might have difficulty in finding a ray of sunshine in the situation in which many manufacturers have been placed because of present shortages of many materials. Nevertheless the resulting frenzied search for substitutes has often uncovered a hitherto overlooked product which has proven satisfactory or even superior to that formerly used.

Unfortunately, however, it has quite often been found that a new discovery is available in only limited amounts since the producer had not previously received sufficient encouragement to warrant installation of the equipment necessary for large-scale production. Even in such cases the research has not been in vain since with the return of normal conditions the producer will be able to supply the product in adequate amounts, the value of it having been established, and the user will have been awakened to the necessity of investigating all materials which he might use.

There is often a temptation to consider a particular product of manufacture as being entirely satisfactory as regards both quality and cost and to curtail research involving it. Because of present shortages of raw materials and equipment there is also a temptation to curtail research involving new products or new uses for present products.

Chas. Pfizer & Co., Inc. does not subscribe to such views. We believe that when the job now in hand is successfully completed our nation will find itself with a productive capacity greatly in excess of any that it has previously enjoyed and that now is the time to prepare to utilize this. We are increasing our research program, primarily of course in order to help do our share toward finishing this present job as quickly as possible, but also secondarily that new products and new uses for old products may be available for any surplus productive capacity to come.

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CAUSTIC KEEPS 'EM SCRAPPING . . .

The more tin we recover from the nation's scrap piles, the more trouble there is in store for Hitler and Hirohito. • The recovery of tin from scrap is a big and important job; it is a job that calls for the concerted efforts of the American people to get in the scrap, and it calls for caustic soda to get the tin *out* of the scrap. • This is only one of the many wartime uses for caustic soda. This vital chemical product is helping to produce aluminum, rayon, soap and glycerin, to refine petroleum products and to reclaim rubber from old tires. • Michigan Alkali Caustic Soda, along with many other Michigan Alkali products, is helping the nation in wartime as it has done through many years of peace.

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THIS Wilson & Bennett plant at Richmond will speed up deliveries of steel drums to government shipping centers and to war industries in the Pacific Coast region. A considerable saving in freight costs will be effected for users in this area as well as releasing vital shipping facilities for other war transportation.

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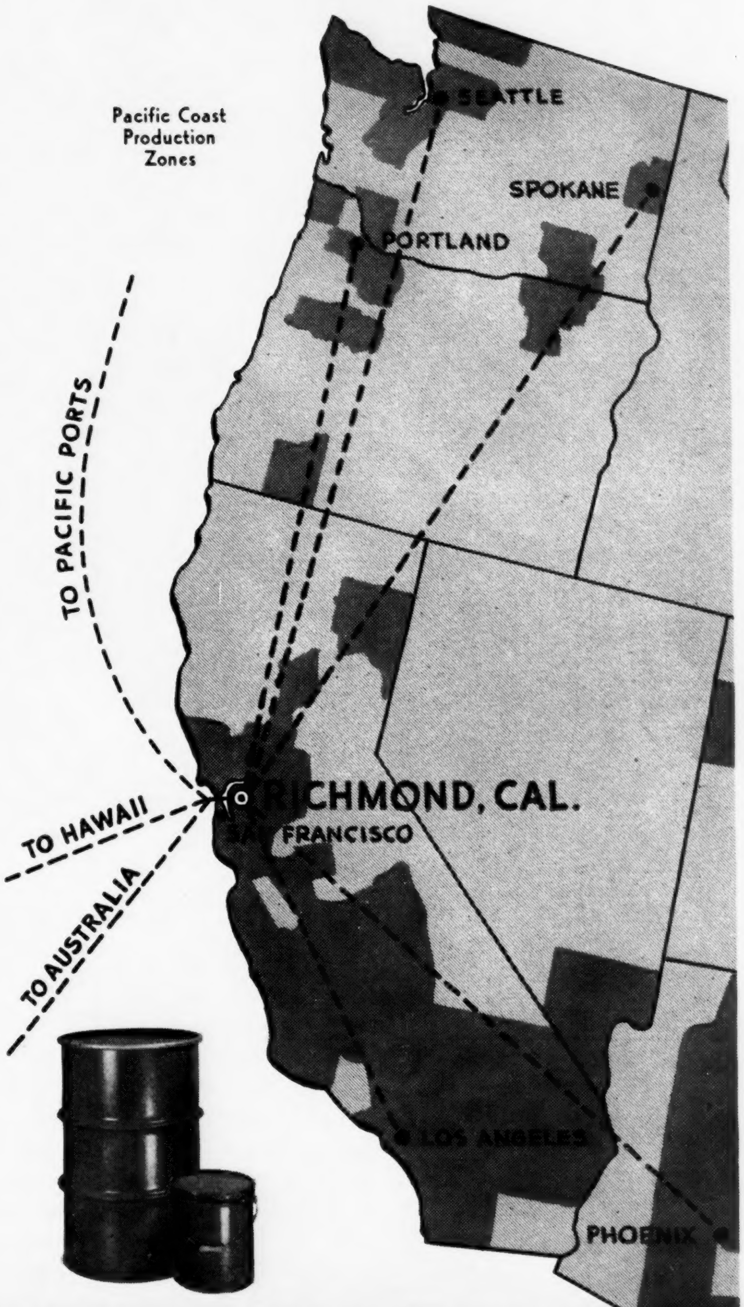

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Politics As An Ingredient of Rubber

EDITORIAL

Walter J. Murphy, Editor

President Roosevelt in a press conference late last month intimated very clearly that he proposed to veto congressional action setting up an agency to be wholly independent of the War Production Board and charged with the problem of expediting the prosecution of the war by making provision for an increased supply of rubber manufactured from alcohol produced from agricultural or forest products. It certainly will be a major disaster should either Mr. Roosevelt change his mind or his veto is overruled by a politically minded House and Senate.

According to Washington reports, only nine senators were on the floor when that body passed this measure. A very thinly populated House passed it two days later. The bill is a particularly vicious one and one that threatens to destroy the prestige and efficiency of the War Production Board and is a direct threat to the whole war effort.

Whether all or part of our projected synthetic rubber output is made from alcohol in turn produced synthetically or from grain or from cat's whiskers is entirely beside the point. Very definitely one agency is and should continue to be entirely responsible for the success of the synthetic rubber program. That agency is the War Production Board headed by Donald Nelson. Split authority surely will result in bungling a matter that we just cannot permit to be dealt with in an inefficient manner. Lack of rubber may bring about the defeat of the Allied Nations.

This action of Congress is wholly unjustified. The Committee on Agriculture in its report states:

"It is quite generally agreed by members of the committee that various monopolistic interests have endeavored to suppress the use of farm products as a source of synthetic rubber."

Earlier in the report it is stated:

"On the other hand, there has been no explanation by any responsible official why this country in setting up its program for the large-scale production of synthetic rubber gave consideration only to untried laboratory experimental processes from petroleum which will require at least twice the time and many times the critical material needed to produce the same amount of synthetic rubber from alcohol."

If the Committee on Agriculture has irrefutable proof to substantiate these statements the place to have gone with it was to the White House rather than to attempt to force legislation through that will in effect establish two separate agencies each charged with the job of producing synthetic rubber. The action of Congress is virtually a vote of "no-confidence" in the President and in his production chief, Donald Nelson. If the War Production Board and Mr. Nelson are guilty as charged of aiding and abetting certain interests for selfish reasons which can also be termed unpatriotic and treasonable under the circumstances then it is Mr. Roosevelt's plain duty to remove Mr. Nelson and those aids directly involved. And it is the height of absurdity to insinuate that the President would not do so if the proof was really irrefutable, not just political propaganda.

By its action Congress has virtually told the American people that as far as it is concerned the war effort is very much secondary to the question of getting reelected in November. In this instance the American public is very much more inclined to accept the President's view than that of a group of farm bloc senators whose knowledge of chemistry is very aptly illustrated by the following wording in the bill itself:

"For the purposes of this Act (a) the term "rubber" unless the context otherwise indicates means rubber produced from alcohol as the basic material; (b) *the term "alcohol" shall mean any chemical developed from agriculture or forest products.*" (the italics are ours). For the benefit of any of our friends not chemically trained it might be said that it would take most of this issue to list the chemicals that are or could be made from agriculture or forest products.

It's Everybody's Business: A reader of this publication, an official in a medium-sized but very progressive chemical company, writes the following:

"Have you been following the hearings on the Senate Bills now being considered by Senator Bone's committee?

"You'll find them interesting—disturbingly so. Under the guise of war duress, a new concept of patents, both revolutionary and destructive, is being urged upon the country in a ruthless manner. Calm, dispassionate inquiry has given way to trial by newspaper headlines.

"The chemical industry looks to your magazine for leadership. You are one of the molders of public opinion in that field. Your readers at the moment are up to their ears in the business of winning a war and are probably not fully aware of the implications of the pending legislation. They need to be stirred and aroused to action.

"I am enclosing three reprints that you will find interesting—an article by Harold Fleming in Nation's Business, which gives the background of the attack on the patent system, a presentation of two views of the case by Thurman Arnold and Lawrence Langner in the July Atlantic Monthly, and an impersonal, legal analysis prepared by the Boston Patent Law Association. Frankly, we're vitally interested because we are a small concern that believes research contributes toward a better way of living. And we also believe that the fruits of our labors are entitled to protection. There must be many more like us in other branches of industry that need to be aroused and united. This is a job for the trade press.

"After you have read these articles, won't you let me know how you think your industry can be awakened to the implications of these bills?"

Yes, most certainly, we have been following these bills. Consistently we have been urging the readers of Chemical Industries to secure copies of such proposed measures as Senate Bills 2303 and 2491, if they are not already familiar with their contents, and to write their representatives and senators asking them to oppose these measures for good and valid reasons.

Unless, however, the large majority of those who constitute the chemical and other industries whose very existence depends upon the continued maintenance of an equitable patent structure drop their present apathy towards these and other similar bills the fight for rights guaranteed by the Constitution will be lost. Perhaps not during the present congressional session but very likely in the next.

We do propose the following workable plan:

1. Every member of the industry who reads this to write his or her congressmen and senators immediately. This attack on the fundamentals of the American patent system is not just the concern of "big business" and the "industrialists" and "capitalists." It is or should be the direct concern of every chemist, engineer, salesman, plant worker and office worker in the chemical field. If this fact alone could be driven home to those in Washington who aim to "socialize" industry they very likely would change their tune for it would mean votes—millions of them.
2. Every member of the industry to act as a one-man committee on publicity, explaining to his or her neighbors what it will mean if the patent system is emasculated by such proposed measures and to ask that such neighbors also write to Washington.
3. Every member of the industry to write letters to their local newspapers condemning these bills. Discuss them in offices, in plants, in the home, on trains. Show this and other editorials from other publications to your lay friends.
4. Members of various associations and societies and other local groups allied to the chemical field to ask for discussion of these measures during meetings and to urge that suitable resolutions be passed and forwarded to Washington.

The general public has been led to believe by the very efficient Washington publicity grist mill that the present form of the patent law must for all practical purposes be destroyed. It collectively is our business to see that these false impressions are not only corrected, but that positive and definite action is taken by hundreds of thousands of men and women, making known to our legislators that the responsible citizens of this country do not want to be "socialized" now under the guise of a war necessity or in the post-war period under the pretense of a dozen or more wholly deceptive labels.

Strikes Must Stop: Since Pearl Harbor there has been a marked decline in the number of strikes in plants vital to the war effort but there still will be far too many if even one is called in this the gravest period in American history. It should be self-evident that we cannot permit any cessation of industrial effort for any reason and most certainly not as a result of unwarranted jurisdictional disputes. If labor leaders cannot control their own members and prevent "wildcat" strikes then the government must step in with a determined hand. And there is now plenty of evidence that it will, for last month Wayne L. Morse, public member of the National War Labor Board stated:

"You are going to find that drastic action will be taken against anyone in any labor organization who tries to bring about a stoppage of work over jurisdictional disputes, even to the application of the laws of treason, if necessary."

Certainly no repetition of the strike which closed down Monsanto's New England plant for four days last month should be permitted in any war plant in the United States. The immediate matters that were in dispute there are immaterial. Monsanto, as every one knows who is acquainted with the facts, has long pursued one of the most enlightened labor policies that exist in the country. Indeed, the strike was the first in a period of seventy-five years. Under such conditions and circumstances the action of the labor leaders responsible for calling the strike can only be condemned in the most severe terms.

Recently a politically-minded congressman and others who should know better have been making statements to the effect that the war will soon be over and by such blurbs have fostered false hopes in the minds of thousands of citizens of this country. The war is far from being over—it is, indeed, far from being won, and may be lost by those who are willing to walk out on strike when the fate of America hangs in the balance. There were no jurisdictional strikes on Bataan, only death and defeat because the men who fought there lacked the necessary implements to defend themselves.

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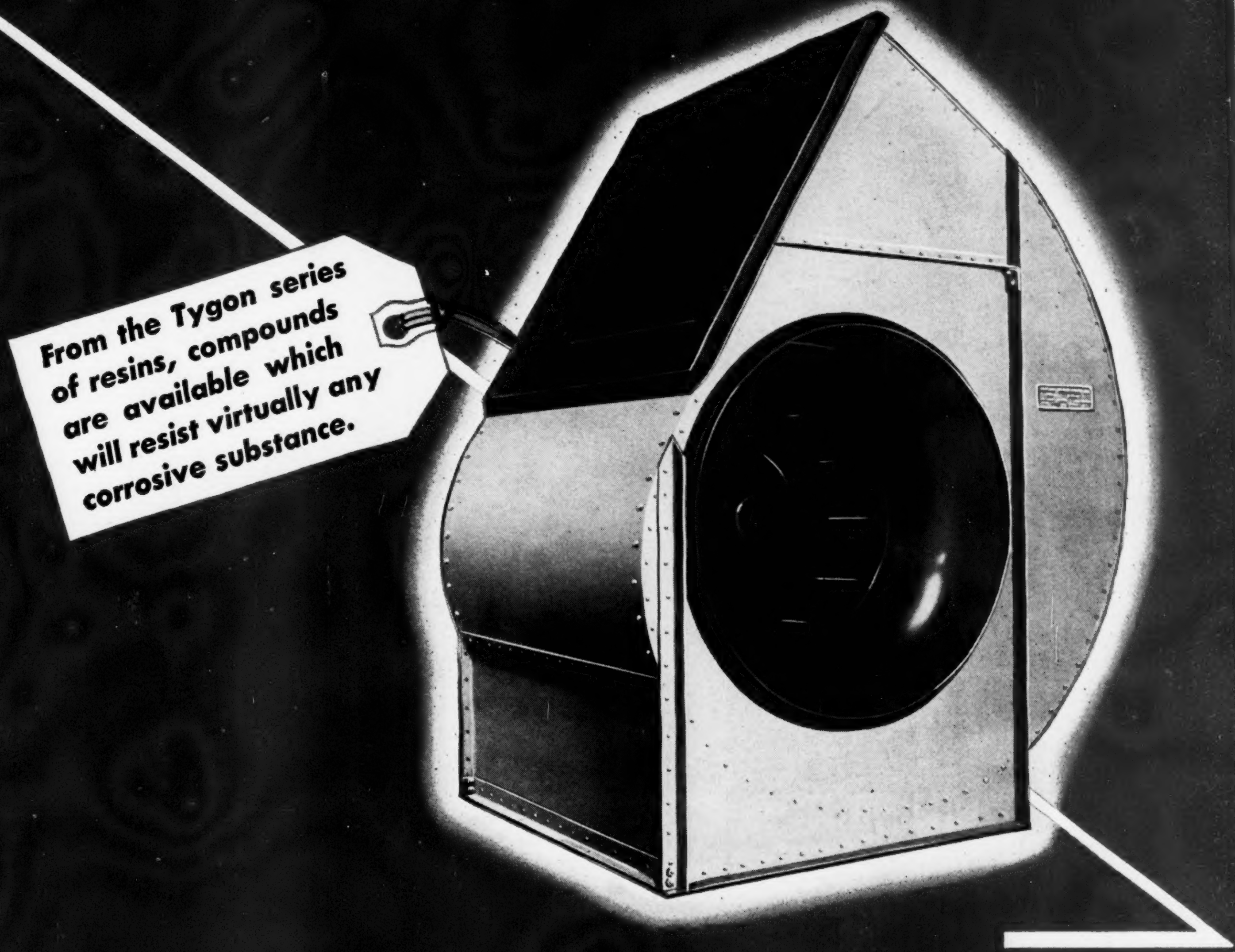

IN CENTRALIZED ventilating systems one fan must frequently handle the *mixed* gases arising from a number of different corrosive solutions. Alloy, or rubber-lined equipment, excellent in their resistance to a specific corrosive, lack the ability to resist a wide range of corrosive gases, particularly when present in mixed form. *The almost universal corrosion-resistance of Tygon indicates its use as a protective medium for all equipment exposed to the simultaneous attack of different corrosives.*

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While any standard fan can be Tygon-lined, U. S. Stoneware offers a comprehensive line of fans which are particularly adaptable to Tygon linings.

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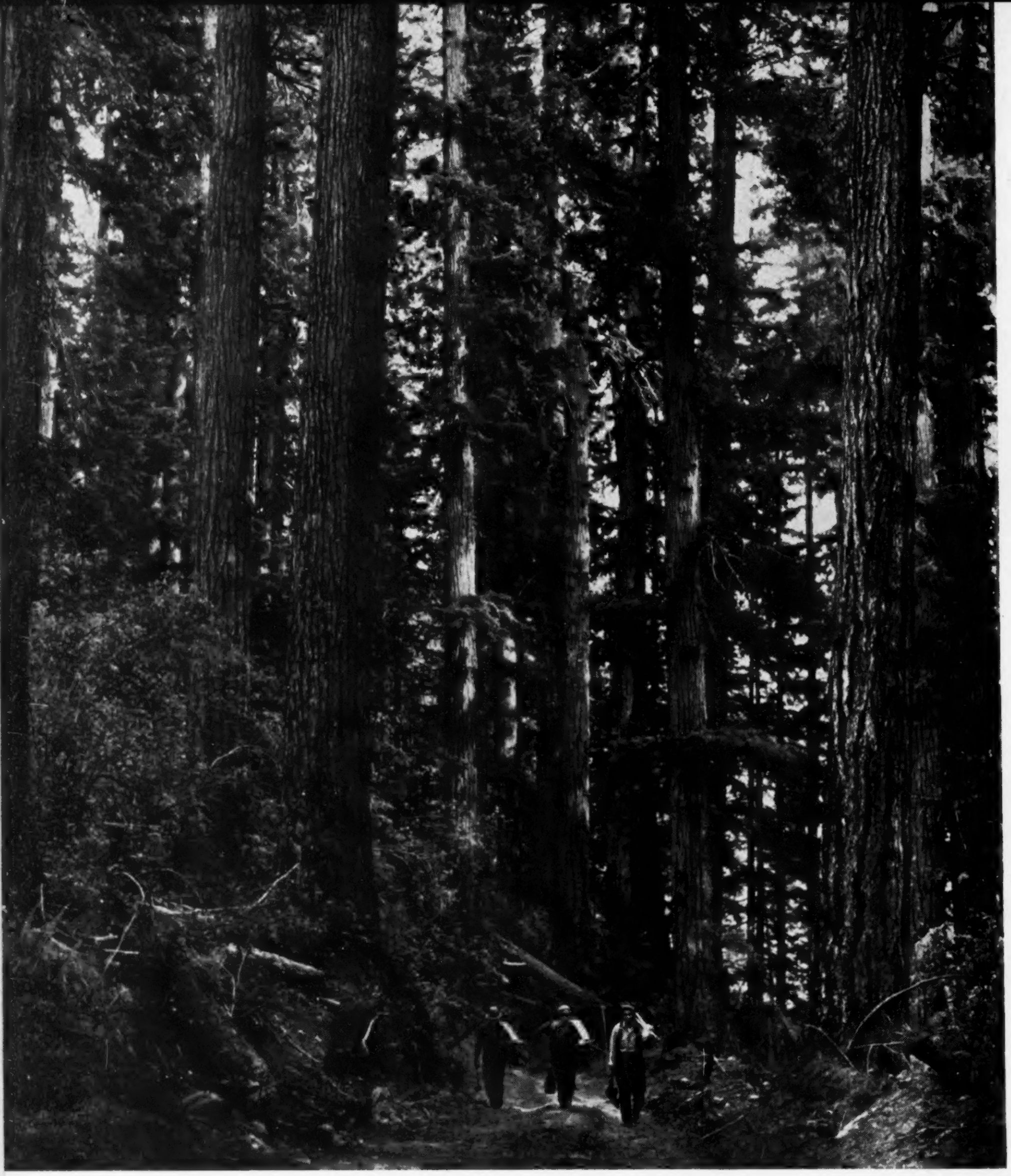
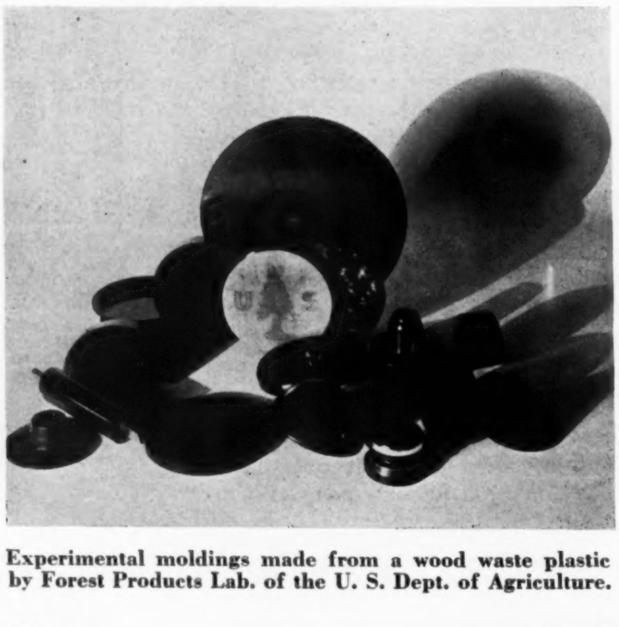
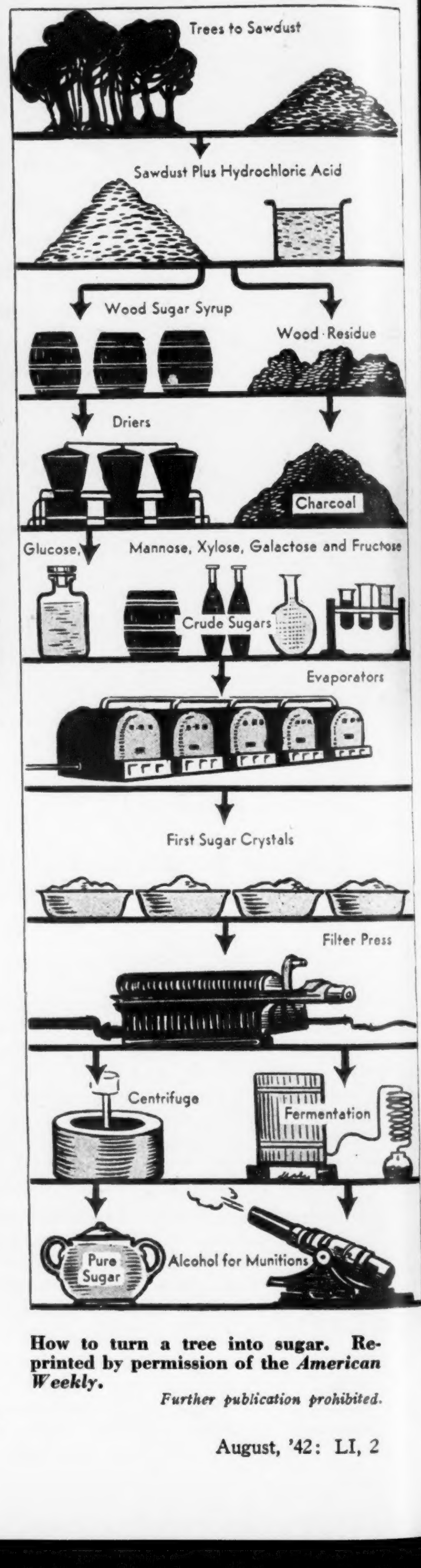


More than a million men are trained to work in wood. Photo courtesy American Forest Products Industries, Inc.



Experimental moldings made from a wood waste plastic by Forest Products Lab. of the U. S. Dept. of Agriculture.



How to turn a tree into sugar. Reprinted by permission of the *American Weekly*.

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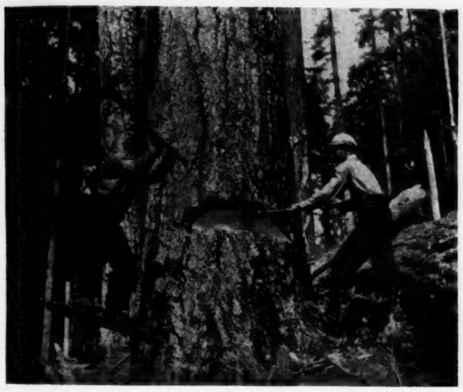
CHEMICAL UTILIZATION OF WOOD WASTE

By Robert S. Aries
Polytechnic Institute
Brooklyn

Here is a discussion by an expert in the field which points out that research will transform problems of utilization of waste wood into a lucrative practice in the industry. Read what has been done so far and what there is to be expected in the future.



America's forests have been from the beginning her original and most abundant resource. These are giant firs.

DESPITE the untold riches which the United States has extracted from her forests, the processes of utilization have too generally been haphazard and inefficient. Considering the country as a whole, it is estimated that nearly two-thirds of the entire forest drain is lost during manufacture and use. In view of the 461,000,000 acres of forest land in the United States with a supply of standing saw timber of over 1.5 trillion board feet—enough to last for over 50 years at the present rate of consumption, there should be no fear of a general wood shortage, although the total drain is much larger than the estimated current growth. However, competition in the forest products industries is very sharp and is expected to be keener after the present conflict, both from domestic and foreign producers, providing an incentive for waste utilization. Reduced markets for products of the lumber industry in the last ten years have required increased efficiency aimed toward lower costs as well as research to find uses for wastes and developing new products.

The natural answer to the problem of waste wood utilization is in chemical conversion. Wood can be looked upon as analogous to mineral ores as a source of lignin and cellulose and, in this respect, waste wood is just as satisfactory as the high-grade one which can be used for mechanical purposes. The wood technologist does not have to go out of his field to study waste utilization while the sugar chemist must enter a new field to study bagasse utilization. The manufacture of cellulose products has been increasing by 200,000 tons per year even during the height of the depression, while we believe that the utilization of lignin

Sawdust pile at a Lake states mill. From the Forest Products Lab., U. S. Dept. Agriculture.

Ponderosa Pine and Sugar Pine Logs in pond awaiting their turn up the log slip at a western pine sawmill.

TABLE I

Available Annual Logging Waste in the United States.*

Millions of Tons Dry Wood Substance.

Type of Waste	New England	Middle Atlantic	Lake States	Central	South	Pacific Coast	W. Rocky Mt.	S. Rocky Mt.	Total U.S.
Forest									
Hardwood	0.2	0.5	0.9	2.8	4.6	——	——	——	9
Softwood	0.8	0.3	0.9	0.8	11.9	11.0	1.1	0.3	27
Total	1.0	0.8	1.7	3.6	16.5	11.0	1.1	0.3	36
Primary Mill									
Hardwood	0.2	0.6	1.2	3.7	6.3	——	——	——	12
Softwood	1.1	0.4	1.1	1.1	16.3	15.1	1.5	0.4	37
Total	1.3	1.0	2.3	4.8	22.6	15.1	1.5	0.4	49
Secondary Mill									
Hardwood	0.02	0.05	1.10	0.31	0.52	——	——	——	1
Softwood	0.09	0.03	0.09	0.09	1.32	1.23	0.12	0.03	3
Total	0.11	0.08	0.19	0.40	1.84	1.23	0.12	0.03	4
Total Waste									
Hardwood	0.4	1.2	2.2	6.8	——	——	——	——	22
Softwood	2.0	0.7	2.0	2.0	29.6	27.3	2.7	0.7	67
Total	2.4	1.9	7.2	8.8	41.0	27.3	2.7	0.7	89

* Source: "A National Plan for American Forestry," Senate Doc. No. 12, (72nd Congress).

will soon be a lucrative practice in the wood-chemical industry. From the point of view of national economy, it would be highly desirable to utilize every possible waste and thus increase employment and the national income. One should also mention that the era of scarcity of natural resources is yet to be encountered by the United States, but it has already been reached by many other nations.

Wood waste may be conveniently grouped into three broad classes (1) Forest waste, those parts of the tree which are at present disposed of by burning in slash burners or left to rot in the woods as well as factory wastes of large size, (2) bark, and (3) saw timber waste, such as sawdust and shavings.

Strictly speaking, wood waste should not be called waste as the latter is defined in the dictionary as "refuse; worthless material," while in this case it means "that which has no value for the usual or main purposes of manufacture" as non-utilized material may be wasted but is not waste.

Obviously, 100 per cent utilization of the tree is impossible and all the outlets, both mechanical and chemical cannot take care of all the wood waste produced, while the production of many commodities may be economically unwise. Therefore, the chemical utilization of wood waste whether on a large or on a small scale should be preceded by a thorough study of all the technical and economic conditions affecting the manufacture and sale of the finished product. Many entrepreneurs have found the venture unprofitable although this is less true in the production of more specialized products.

It is clear that the future prosperity of the lumber industry will depend much upon carrying manufacture as far as possible, involving perpendicular and horizontal integration and extending the industry into the domain of chemical manufacture. Lumber mills, wood-chemical mills, including those for the utilization of wastes will have to be united under a single efficient management.

Besides, there are several factors which limit the disposal of non-utilized wood to other industries.

1.) Contractual arrangements.

When the suppliers of waste wood learn that it is profitably utilized for chemical conversion, they will request a higher price for it, either immediately or when they renew their contracts. Thus any waste to be utilized should either be made within one's enterprise or protected by a long-term contract.

2.) Cost of transportation to consuming centers.

Because of the bulk and weight of non-utilized materials in proportion to their value, they will not ordinarily stand long shipments. Trucks are the most economical for short hauls since they eliminate additional handling as in the case of freight shipments. The margin of profit is generally so small that handling must be reduced to a minimum, preferably by the use of a conveyor only.

3.) Quality and quantity of the material available.

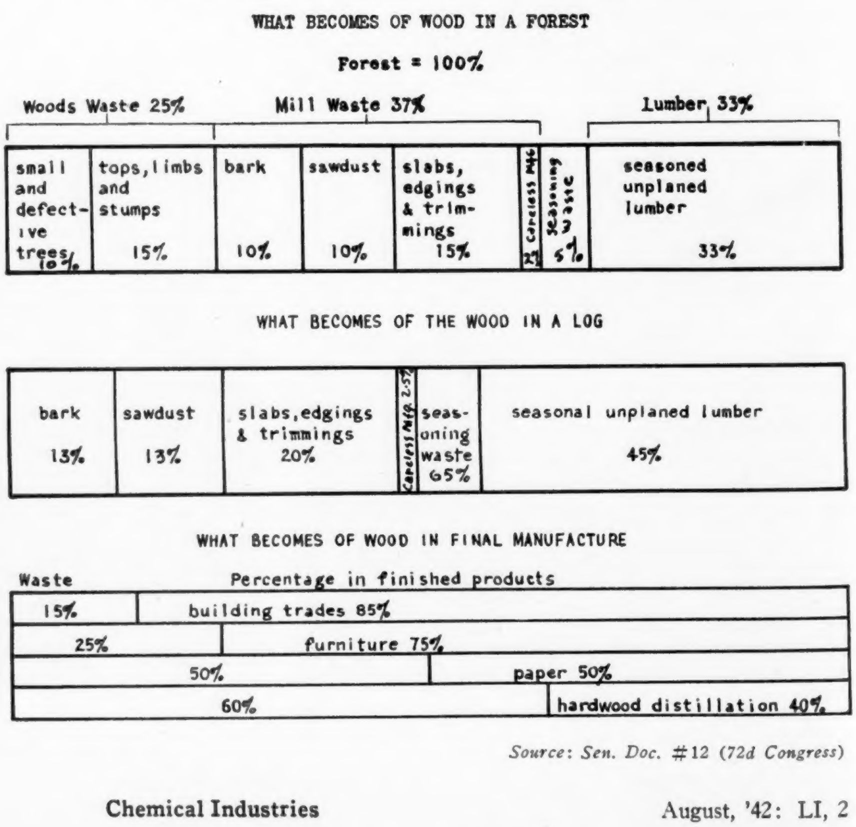
These factors should not be disregarded, as many failures have been caused by the inability to provide materials to the exact specifications, although the latter may be founded on prejudice. Industries which utilize mill waste demand a steady supply, necessitating adequate storage facilities.

Utilization as Fuel

Although this might not be considered as a strictly chemical utilization of wood, a few words should be said about it, as it is the most common form of usage for waste wood, despite the fact that according to a Forest Survey in North Carolina, more than 50 per cent of the wood cut for fuel is cut from living, sound trees. "Hogged" wood (reduced to a smaller and more uniform size) in excess of the needs for plant fuel is used for developing heat and power in localities where conditions are favorable, as in Oregon and Washington. About three and one-half tons of "hogged" wood are equal in fuel value to one ton of coal.

The greater bulk of sawdust and shavings is used for fuel at the points of production. This use will probably continue until a definitely more profitable way of disposing will be devised. This fuelwood can not be considered as wasted although it is not a direct source of income to the mill. It is easy to determine the fuel

Figure 2. Amount of Waste in Wood Manufacture.



Source: Sen. Doc. #12 (72d Congress)

value of the "waste." For example, let us assume that a mill would have to pay $[illegible].00 per ton of coal with a heat value of 14,000 B.T.U. per pound. Sawdust with an average moisture content has a heat value of 5,000 B.T.U. per pound or five-fourteenths of the heat value of a ton of coal ($2.15 in our example) without taking into consideration the extra costs such as handling and firing. In our case, if the manufacturer can sell the sawdust for more than $1.75 a ton, it should be preferable for him to use coal.

The utilization of waste wood of all kinds, including bark, for the manufacture of fuel in the form of briquets has been practiced in Europe for many years while only recently they have been successfully introduced in this country on account of competition from other forms of fuel.

The standard process consists of compressing previously dried sawdust or shavings either alone (in the case of resinous woods) or mixed with binders such as waste sulfite liquors. Heat for the preliminary drying can be supplied by flue gases from sawmill and factory stacks. Current wood briquet production, confined largely to the Pacific Coast states, employs heavy pressures so that the structure of the wood is almost entirely destroyed and the briquet is held together by natural cohesion. Prof. W. Beuschlein of the University of Washington has developed a process whereby he heats the wood until it ignites and then drops it into a retort where, lacking air, it turns into charcoal. The latter is molded into briquets by means of a tar binder.

Briquets can be made profitably only in regions where wood waste is abundant and coal is expensive. They have a fuel value of about 8,000 B.T.U. per pound and thus have to be sold at two thirds of the cost of bituminous coal.

Distillation

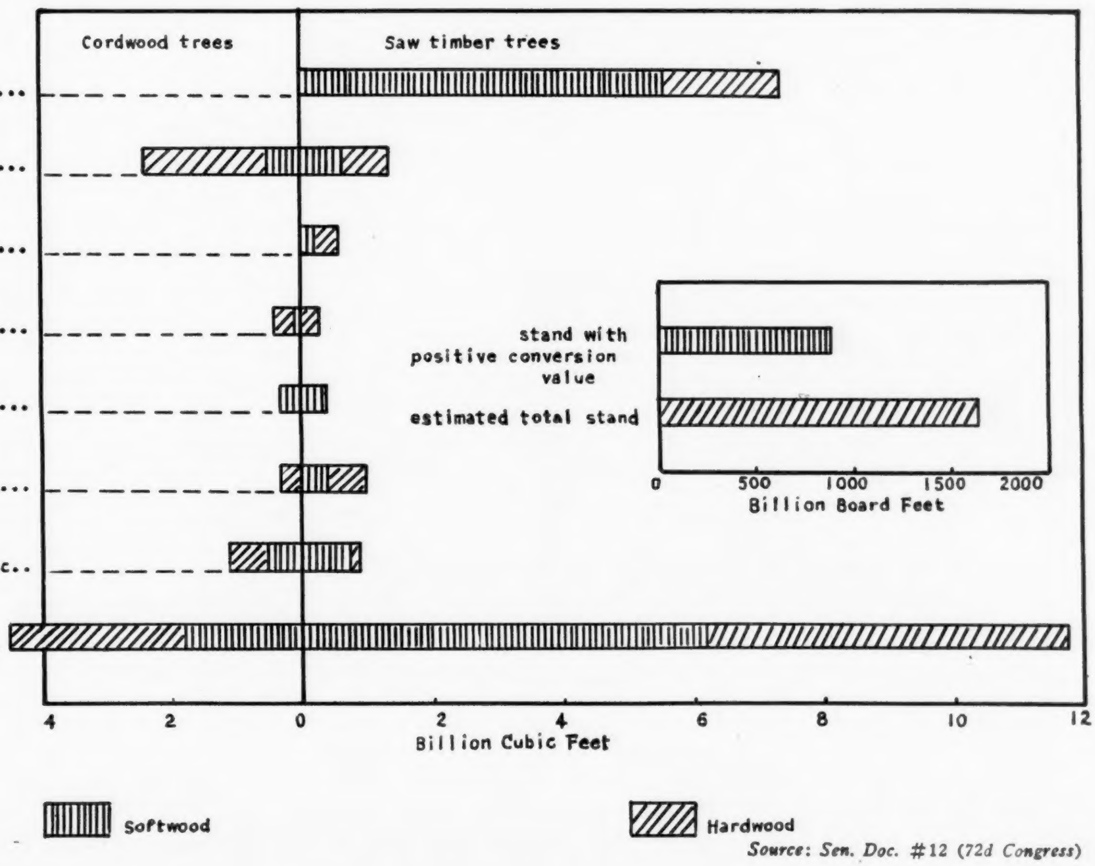
a.) The hardwood distillation industry is notable in that about 70 per cent of its raw material is woods and sawmill waste.[3] Small sized pieces are not desirable and sawdust appears to be of no value. The distillation of softwood mill waste is not feasible on account of low yields, the most common species used being beech, birch, maple, and oak. In 1935, the industry produced more than twenty million bushels of charcoal, large quantities of wood tars, more than 4 million gallons of crude methanol, 25,000 tons of acetate of lime and 10,000 tons of acetic acid—most of these products being vitally needed at the present time. Unfortunately, many plants utilizing wastes were dismantled in the last fifteen years, while it is hard under present conditions to provide existing plants with new retorts and other equipment. Therefore the only speed-up may be made in the cycle of distillation. On account of the large demand for charcoal at the present time, its production in brick and pit kilns may be considered. They will utilize only waste wood. This industry is already developed in some southern states for local use. The expansion or decline of wood distillation has a considerable bearing on forest economics on account of its utilization of waste wood.

b.) In softwood distillation and extraction, it is not possible to use very small pieces of wood, thus the only waste which can be used is slabs, provided they are pitchy enough. However, lightwood and stumps, both of which may be classed as waste are widely used, the principal products being wood turpentine, tar oils and rosins. The future demand for naval stores will be partially met by pulp mills which can recover resin from pulpwood by pre-treatment of the chips.

Pulp and Paper Products

Several pressing problems exist in the pulp and paper industry at present offering good opportunities to investors and engineers. From a glance at recent trends, higher prices for pulpwood seem to be assured for a long time, which, in turn would mean that several submarginal

Figure 1. Drain on Commercial Forests in the U. S.



Source: Sen. Doc. #12 (72d Congress)

processes could be operated at a profit. The demand for paper is inelastic—it is not affected proportionally by given price fluctuations. On the other hand, paper production requires a large investment of capital in proportion to the value of the finished product, while post-war competition from Northern Europe may create serious problems as for example the demand for higher tariffs—problems similar to the ones existing in the sugar industry and expected to appear in the rubber industry.

On account of the requirement for a satisfactory fiber, not all types of waste can be utilized for pulp and paper. A major object in view is to utilize the enormous waste which characterizes present day lumbering operations on the Pacific Coast, while a second important object is to aid in making the U. S. independent of foreign sources of pulp and paper.[12]

Shortages have always forced technological developments in the paper industry. At about the middle of the last century an acute shortage of rags and an increasing demand for paper led to the development of the mechanical pulp process. During World War I, Southern pine was used in increasing quantities to make sulfate or Kraft pulp; its production constitutes at present about one third of the total pulp production in the United States.

By a clear integration of the saw mill and pulp industry we can obtain a more economic utilization of the wood, better use of transportation systems and use of saw mill waste for pulpwood. Pulpwood may be considered as a by-product of the lumber industry as large limbs and tops of trees unsuitable for lumber are usually satisfactory for pulping. This has been already realized by other nations. It is a fact that most of the world's cheap lumber has been exhausted while the per capita consumption of paper has been increasing in all countries, affected only slightly by the business cycle. However, we should not forget that pulpwood accounts for only five per cent of all forest products, although the pulp and paper industry ranks eleventh among all United States industries in value of its products, its gross volume of sales being well over two billion dollare and a capacity of about 10,000,000 short tons. In normal times, production was seven million tons while imports were over two million tons of which 65 per cent were of Scandinavian origin. At present, the utilization of wastes should replace to a large extent these imports as well as take care of the increased export. Besides integration, we shall undoubtedly witness a trend toward greater domestic self sufficiency.

The United States could, if necessary, produce all the pulpwood for future requirements as well as export paper or pulps to other nations of the world. Technological developments may make this practicable.

Worked-out turpentine pines which are not suitable for lumber may be used for pulp. It is estimated that the present supply of such timber is about 7,000,000 cords, and that it is increasing at the rate of 1,800,000 cords per year. This wood is worthless except for cord wood or pulp.[8]

Many kinds of waste have been used in paper making during the last decade, both here and abroad. They consist mainly of large pieces such as spruce and hemlock slabs or butt cuts. Hemlock is generally free from bark as it is cut from peeled logs. In the sulfate process yellow pine mill waste with some bark may be utilized whereas in the other processes all the bark must be removed before pulping which is a serious drawback unless a very low grade of newsprint or paper is desired. If slabs are used, their chipping is more tedious than roundwood.

Seventy per cent of the lumber cut of Washington and Oregon is Douglas fir, and surveys show that approximately four million cords are left in the woods in logging operations—situation both undesirable and unnecessary.[12]

The pulping of Southern hardwood species by a semi-chemical process has shown much promise. It seems entirely possible to produce a low-cost pulp from the gums and possible other species used for newsprint.[11] The semi-chemical process consists essentially in a partial cooking with a reduced amount of chemical followed by mechanical disintegration, and gives a 75 per cent pulp yield at the same cost as groundwood pulp.

Recently, the Forest Products laboratory has obtained pulp and a variety of chemical products by hydrogenation. This discovery, while not yet applied, may hold most interesting industrial potentialities.[12]

Many other new processes for the pulping of waste wood have been developed in the last decade or are in the process of development. The Northwood Chemical Co. for example, is developing at the Polytechnic Institute of Brooklyn a process which will produce both high grade cellulose and a lignin derivative suitable for plasticizing. This process may utilize waste wood and promises to enter the permanent picture of the wood-chemical industry.

The Use of Bark for Paper Specialties

The loss in barking depends on the nature and condition of the wood and varies from 10 to 25 per cent of the weight of the wood. Being saturated with water, (even with heavy pressing it can be made only 50 per cent dry) it has little value as fuel. Large quantities of bark in the pulping and tanning industry are awaiting successful utilization. The Forest Products Laboratory has conducted extensive research in this respect.[6]

Satisfactory paper has been made from 80 per cent extracted hemlock bark and 20 per cent kraft pulp possessing remarkable impregnation towards tars, asphalt, etc. Very good roofing felts have also been made at the Laboratory and other plants. The average price of rags for the manufacture of felts at the present time is not far from $50 per ton, and the conversion loss is estimated to average 25 per cent. The value of waste bark (with 65 per cent moisture) is 60c. per ton and 80 per cent of it can be incorporated in the felt.

Boards can be made with fifty or more per cent bark incorporated in them. Carpet liners, bottle wrappers, etc. can also be made from it. Waste bark may also be used as a filler and substitute in part for a more expensive stock. In many cases it is more economical to dry the bark from 66 to 15 per cent moisture content at the point of origin and thus avoid high freight costs.

Tanning and Dye Extract

It is estimated that the chestnut extract industry, which is practically the only wood used in the production of tanning extract, utilizes more than 300,000 cords of wood annually. There is no reason why all of it shouldn't be waste wood as the waste is just as rich in tannin, while handling costs could be reduced to a minimum in an integrated industry.

Dye extract made from native woods, whose consumption is over 5,000 tons, should be produced entirely from waste wood. Hemlock bark can also be used in the production of tanning extract, as soon there may be no more chestnut to utilize, while cheaper chemical tannins have been developed.

At present, wood is generally peeled in the woods, while in an integrated industry, it could be peeled mechanically at the sawmill at a considerable economy and improvement of the quality of the products.

Many other less known products are obtained from wood extractions and occupy a definite position in commerce, although the demand for them may be easily satisfied.[9] Among these are the extractive from cascara bark and the galactan from western larch. The latter, upon oxidation, gives rise to mucic acid used in baking powders, soft drinks, etc.

Hydrolysis of Waste Wood for Sugar and Alcohol

The hydrolysis of the cellulose in wood by means of acids is in commercial operation in Germany where large amounts of wood sugars and alcohol are obtained in this way.

Dilute acid hydrolysis (commonly known as the Scholler Process) may be

applied to wood waste in form of wood flour, sawdust, or chips.[5] The first commercial unit utilizing wood waste was built in South Carolina in 1910, but it failed because it yielded only 14 gallons of alcohol per ton of dry wood substance.

At present, softwood lumber mill waste can be made to yield twenty gallons or more of 95 per cent alcohol per ton, and hardwood waste alcohol about half as much. Some actual yields obtained by the United States Forest Products Laboratory from the waste of various woods are given in Table 2.[3]

This table is rather old and substantially higher yields may be obtained at present.[1, 5]

The manufacture of industrial alcohol is one method of utilizing lumber mill refuse on a large scale. An alcohol plant with a daily supply of 180 tons of wood can produce 3,600 gallons of 190 proof alcohol at a cost of about 20 cents a gallon.

Both pentose and hexose sugars are obtained by this method but the latter only are fermentable into alcohol. From Table 2 we see that the highest yield is 36.3 per cent, based on reducing wood sugars fermented, compared to 48 per cent when cane sugar is used. Acetic acid and furfural are also obtained by hydrolysis and can be recovered economically.

Compared with the production of alcohol from molasses, this process is not profitable, but in view of the sugar shortage, if we need the alcohol, we have to go into submarginal processes.

Either the Bergius or the Scholler process could be applied, as both of them have certain advantages and disadvantages[5] and a careful economic study is necessary before reaching a final decision.

The production of ethyl alcohol would be practical only at localities where there is a very large daily supply (at least 250 tons) of wood waste available without expensive transportation costs. It is estimated that from material now wasted at the mill some 300 million gallons of alcohol could be produced annually.

An angle in the process which has been disregarded until recently is the production of ligno-cellulose plastic fillers, which will be discussed later on.

TABLE 2

Yields of Alcohol from Wood Waste.

Kind of Wood	% of Wood Convertible into Sugars	% of Sugars fermentable	Gallons of 95% Alcohol from 1 ton of dry wood
	Softwood Waste		
White Spruce...	23	71	25.8
Longleaf Pine..	23	72	25.1
Western Hemlock	21	77	23.0
Sugar Pine.....	20	66	21.5
Douglas Fir....	21	67	20.7
	Hardwood Waste		
Silver Maple...	20	47	14.1
Birch	20	46	12.9
White Oak.....	17	50	12.4
Slippery Elm...	16	26	6.0

Recently D. Othmer and his collaborators at the Polytechnic Institute of Brooklyn have re-investigated the possibility of producing oxalic acid by the old process of alkali fusion of sawdust.[7] Because of current prices and large demand for the products obtained, this research is of definite interest in the present emergency.

By utilizing modern chemical methods, high yields may be obtained—as high as 79 per cent oxalic, 18.9 per cent acetic and 3.8 per cent formic acid as well as 5 per cent methanol.

Since the sodium hydroxide is the most expensive raw material as well as hard to obtain at present, its efficient economy is a requisite for the successful operation of the process more than any other single factor. Under the present conditions this process may compete with present methods for the production of oxalic acid; besides its manufacture will utilize more than 13 million pounds of sawdust. Another way of producing oxalic, tartaric and other acids is by the treatment of waste wood by HNO_3. This process too is being re-investigated at the Polytechnic Institute by utilizing modern methods in view of its feasibility under present day conditions.

Utilization of Waste Lignin

The time when forests will be considered primarily as suppliers of cellulose and lignin is yet remote, but current chemical research in lignin chemistry indicates that "the largest waste in industry" may become a lucrative source of income for the wood-chemical industry. Pulping liquors may supply more than 1,500,000 tons of lignin in addition to the many million tons which may be supplied by forest and sawmill wastes. Sulfite and soda pulp mills evaporate and burn the lignin, but as our knowledge of the latter increases, we find many other uses on account of the numerous reactive groups in its molecule. Harris and his co-workers as the Forest Products Laboratory for example, have hydrogenated aspen lignin to obtain 26.5 per cent methanol, 38.2 per cent propylcyclohexane and 22 per cent of a high-boiling resin.

Sulfite liquors are used for fertilizers, either directly or combined with ammonia; as fuel to supply steam for the pulping operation; as road binder for secondary roads; alcohol and yeast and vanillin is produced commercially from them in Canada.

The use of lignins for plastics is given elsewhere, while its high molecular weight coupled with its tendency to show acidic or phenolic properties make it useful in the tanning of leather and softening of boiler water. On account of some yet unknown property, lignin acts as depolarizer in the negative plates of storage batteries with a great increase in the output at temperatures below zero.[4]

Vanillin and other phenolic substances are obtained as clevage products from sulfite liquor lignin by the action of hot sodium hydroxide. Many new organic compounds will undoubtedly be prepared from lignin as soon as a better knowledge of its structure is attained. Since it comprises one-fourth of the original wood, the need for methods for its utilization or recovery are self evident.

Plastics from Waste Wood

The importance of plastics has been definitely demonstrated during the present emergency. Unfortunately their increased use to replace metals has resulted in a severe shortage in them as well as raw materials. Wood waste, being available throughout the country in large quantities at a very low cost, constitutes an ideal material for plastics.

Wood itself can be pressed into a compact mass suitable for fuel briquettes but not satisfactory for structural or weather resisting purposes. Lignin alone, however, is very resistant to water and can be pressed with the help of plasticizers. Enough cellulose should be left to serve as a filler and decrease the brittleness. This is done by an acid or aniline hydrolysis pre-treatment method. A low ratio of lignin to hydrolyzed cellulose will have high strength values and low water resistance.[10] The yield from this hydrolysis is more than 62 per cent by weight of the original wood waste. The material is then ground to a particle size ranging from 40 to 100 mesh and subjected to pressing at temperatures above 150°C. under 3,000 lbs. pressure.

This material offers wide possibilities for use as a floor tile, switchboard panels and a variety of other pressed and molded products. A plant capable of producing two tons of this resin a day would cost approximately $13,000 and the powder ready for molding should not cost more than 3-4 cents per pound as compared to about 17 cents for the well known phenolic plastics.

A new type of resin made from chemical derivatives of waste wood and other waste cellulosic materials is being produced in commercial quantities by the Polyxor Chemical Co. under the name of "Polyxile" synthetic resin. It is a dark thermoplastic resin with high chemical and physical stability while soluble in many of the low priced organic solvents. Polyxile resins are well suited for protective coatings on metals, concrete or paper, in order to make them waterproof, acid and alkali resistant. These coatings are stable at temperatures over 150°C. Polyxile is manufactured in several grades of different hardness. Its high dielectric strength and attractive price offer high possibilities that it will develop into an important outlet for waste wood materials.

It appears that even cheaper plastics from low quality woods may be in the offing.[13] The Forest Products Laboratory has found that green swamp oak and blackjack oak become thermoplastic after soaking in a special inexpensive solution. This process may work with some other species and with hogged wood or sawdust. The development of this process will be of the utmost significance to southern hardwood utilization as well as waste wood utilization throughout the country.

Lignin Resins

Many new plastics have been developed during the last decade utilizing lignin as a main constituent or bonding agent, mainly the lignin recovered from various pulping or hydrolysis processes. Precipitated ligno-sulfonate can be molded into a hard, strong board with various fillers. Bergius and Färber pressed lignin residues from wood hydrolysis without the addition of any other binding agents. However, plastic made of modified ligneous materials have better physical properties and are to be preferred. Thus, a good plastic has been made by condensing sulfite waste liquor with phenol, using hexamethylene tetramine as a catalyst.

The condensation reaction can be carried out during the molding operation, instead of forming a resin prior to molding. Thus ten per cent furfural can be used with precipitated lignin from alkaline pulping liquors to form dark colored lustrous articles.

Many patents have been taken out on condensations of phenol with lignin from various sources. Various setting agents may be used, one of the most common being hexamethylene tetramine which accelerates curing in the mold.

Under alkaline conditions, Collins produced a phenol-lignin-aldehyde resin which is very resistant to hydrolysis, swelling and decomposition. Other chemicals can be introduced in this reaction, such as amines for the production of a water soluble resin.

The field of lignin plastics undoubtedly offers great promise for the utilization of waste wood.

Fillers From Waste Wood

Upon the proper selection of the filler, no less than of the binder, depend the qualities of molded products.

Wood Flour

About 50,000 tons of wood flour are expected to be produced in the United States in 1942 and all of it is made from waste wood—especially sawdust and shavings. Wood flour, free of dirt and bark, is probably the most universally used filler as it improves shock resistance and yields a tougher product. Soft pines and spruces are the most common species and customarily about eighty per cent should pass through an 80 mesh screen. Resinous woods are undesirable, as they require special treatments, while its moisture content should not be over 6 per cent, since it affects the dielectric properties of the product. The amount of wood flour comprises from 30 per cent (where high luster is desired) to 50 per cent of the weight of the finished product.

Other very important applications of wood flour at present are its use as an absorbent for nitro-glycerine in the manufacture of dynamite and in the linoleum industry in which its consumption is expected to increase on account of the lack of shipping space for cork imports. In 1937, 20,000 tons of wood flour were used in the linoleum industry, half of which were imported.

Lignocellulose Fillers

Hydrolyzed wood makes an excellent filler for use in the production of resins, especially those of the phenolic type. Molding of hydrolyzed lignocellulose itself does not produce efficient plasticity. Sherrard and Beglinger added phenol and an acid catalyst to sawdust, carrying out the condensation reaction during the molding operation. Lignocellulose fillers, although recently offered on the market, have a wide acceptance. Plastics molded with it have a greater flow than wood-flour filler and a greater moisture resistance; 25 to 30 per cent more hydrolyzed wood than wood flour can be used, and it is estimated that by this means a saving of 1 to 2 cents per pound can be effected in the production of a filled molding powder.[13]

Composition Products

Sawdust is an important ingredient in many flooring compounds, magnesium oxychloride being a common mineral base. The proportions of sawdust vary from 4 to 70 per cent. Softwood, sawdust, chalk, flour and cement are used in the prefabrication of a common type of residential unit in England possessing a high strength in relation to its light weight.

Sawdust and shavings are used to some extent as fillers in various types of concrete-like products in order to contribute lightness, porosity and insulating qualities. About one-third to one-half of the weight of the material is sawdust.

The number of products made by casting mixtures containing sawdust is increasing. The cast products hold nails well, can be sawn, are waterproof and fireproof up to 2,600°F. as much as 80 to 90 per cent of sawdust can be used.

Stuccos, plasters and gypsum compositions also may use sawdust as a filler. Hollow clay tile is made light and porous by adding 25 to 35 per cent sawdust. The use of sawdust in these compounds is decreasing, on account of the general use of "bubbling" compounds for the purpose of expanding the mass to lighten its weight and increase porosity.

Wood Waste for Motor Fuels

The use of wood as a source of producer gas for power and heat has been intensively studied and commonly employed in Europe but under normal conditions is not feasible in the United States on account of competition from other fuels. However, on account of the difficulty in transporting gasoline and fuel oil to certain states a thought may be given to this question in case of a long conflict. In Washington and Oregon, for example, all automobiles, trucks and tractors could be abundantly supplied with fuel in the form of waste wood. Twenty-five pounds of wood are equivalent to one gallon of gasoline. For best results, sawdust mixed with 50 per cent of hogged fuel should be used. In Germany generators for wet fuel have been developed, tractors even using wood with 40 per cent moisture, a special advantage in view of the reliance on local fuel for this type of generator.

Status of the Chemical Utilization of Waste Wood

Chemical utilization of wood constitutes only less than 8 per cent of the total wood used in the United States of which a very small fraction can be classified as waste wood utilization. There are, however, promising developments in the fields of cellulose and lignin chemistry which may change the picture during the next decade, but one cannot predict how much waste will be utilized. Undoubtedly we shall witness the union under a single management of lumber mills, pulp and paper mills and the various mills of secondary manufacture. The forests—producers of lignin and cellulose—may be cropped several times in a generation and yield a much larger total of industrial material than at present. We may see in the future a decline in the use of lumber, but the prospect is that forest utilization will increase. Being replaceable and growable, wood will be called upon more and more to supplement the exhaustible materials. We are witnessing this during the present emergency and will undoubtedly see more of it in the future.

The common economic principle in waste utilization is that it should at least pay for itself. Forest waste and mill waste vary greatly in cost of collection. Contractual arrangements for the raw material should also be considered, as when a waste utilization plant is already built, the giver will be in a better position to bargain since the taxer will either have to pay more or go out of business.

Many processes operate on such narrow

margins of profit that the erecting of a 50 ton or 100 ton plant might spell the difference between failure and success, while it is generally more difficult and expensive to obtain large amounts of waste.

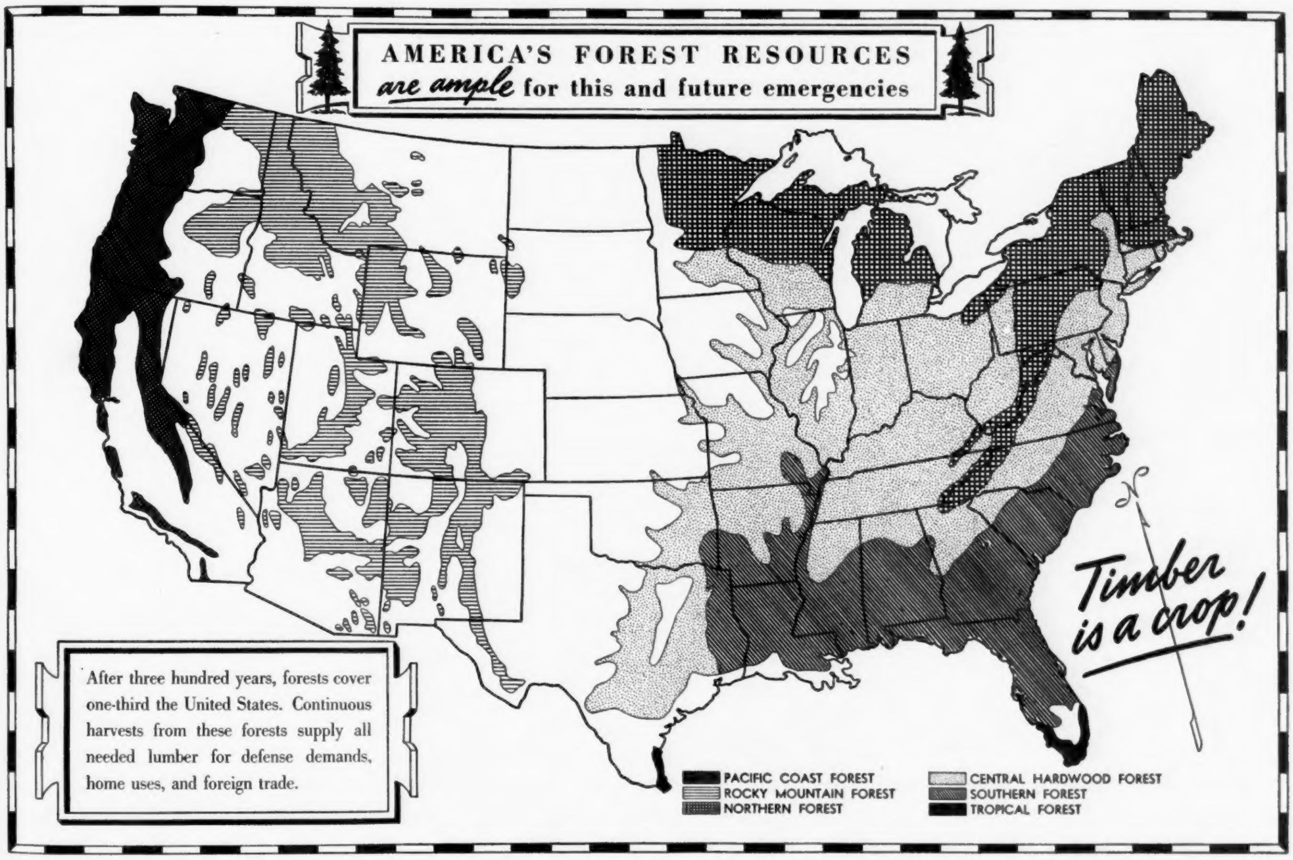
The national economy is naturally affected by waste utilization. Although wood wastes are somewhat in competition with agricultural wastes because of their similar chemical composition, they should not be disregarded in favor of the latter, despite political or other influences. The lumber industry has a production of close to one billion dollars, while the secondary industries, not including pulp and paper, bring the total of forest-industries products of 3 billions, employing close to 800,000 workers, while the capital involved is estimated to be at 10 billions.

Chemical utilization can not increase the value of all the available wood waste, but will probably increase slightly its value, or it may increase considerably the value of a small amount of waste, depending on the kind of technological developments. Besides, chemical conversion does not, in general, produce wood substitutes as is the case of mechanical utilization of wastes, and thus has no detrimental effect on the consumption and value of lumber.

It is reasonable to believe that research will transform problems of utilization of waste wood into a lucrative practice in the industry, present day wastes providing the raw materials for new chemical industries.

LITERATURE CITED

1. Färber, E., *Private Communication* (1942).
2. Forest Products Lab., Bull. R64 "Outlets for Wood Waste" (1942).
3. Forest Products Lab., Tech. Note No. 120.
4. Harris, E E., Ind. Eng. Chem., August 1940.
5. Katzen, R. and Othmer, D. F., Ind. Eng. Chem. 34, 314 (1942).
6. Kress, O., Res. Paper No. 889, For. Prod. Lab. (1938).
7. Othmer, D. F. *et al.*, Ind. Eng. Chem. 34, 262 (1942).
8. "Report on the Future of the Paper Industry and the Effects on Stumpage Values", Amer. Inst. for Econ. Res., Boston, p. 56 (1938).
9. Sherrard, E. C., "Chem. of Wood in Rel. to Present and Possible Use." R. 984, For. Prod. Lab. (1933).
10. Sherrard, Beglinger and Hohf, Res. Bull. 1209. For. Prod. Lab. (1941).
11. Truaux, T. R., "Possib. of For. Prod. in South," South. Lumberman, Dec. 1940.
12. Winslow, C. P. "Looking Forward to Better Forest Utilization", South. Lumberman, Jan. 1930,
13. Winslow, C. P., "Rec. Devts. in Chem. Util. of Wood," (1940).



"TIMBER IS A CROP which, when properly protected, GROWS. Like other crops, timber must be harvested at maturity before decadence.

With protection from fire, insects, and disease the 461,000,000 acres of America's commercial forest land will grow enough timber to meet all future domestic needs for forest products and will continue to provide a substantial supply available for export.

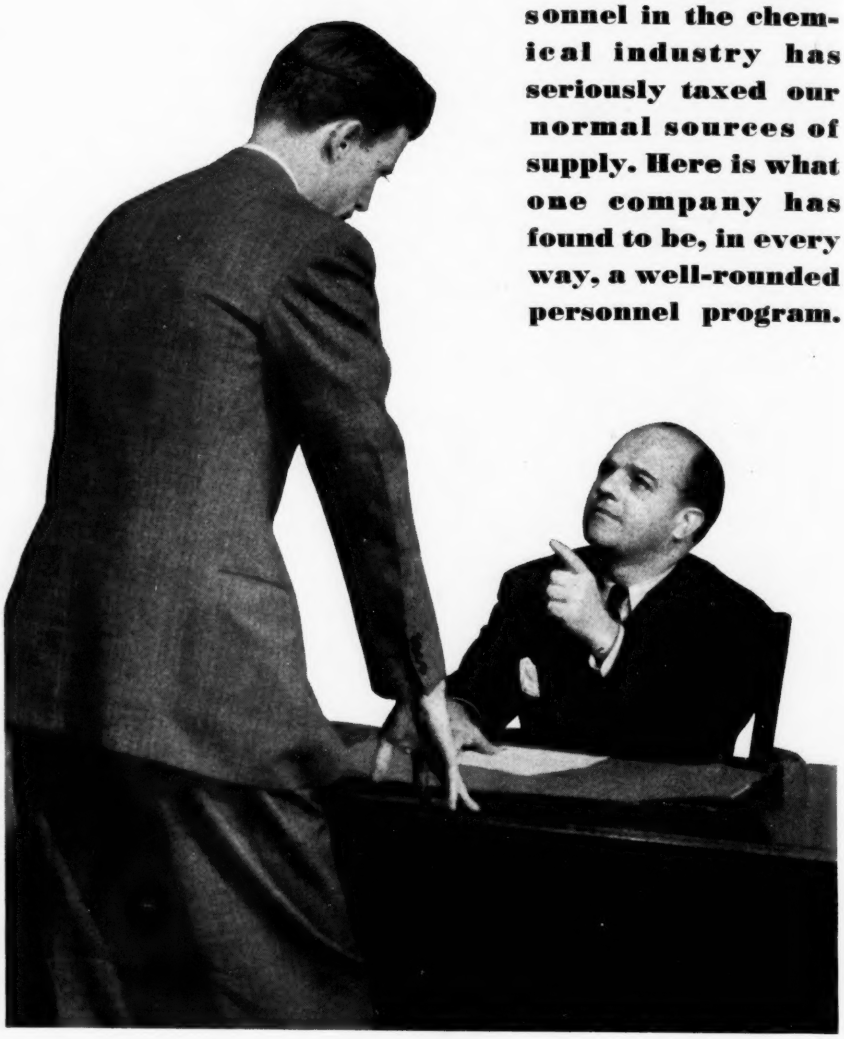
Forest land owners, large and small, in increasing numbers are keeping their forest lands productive. Many timber companies have long been operating on a sustained-yield basis. Each year increasing numbers are conducting their logging with view to continuous forest production.

American 'Tree Farms' will provide an ample supply of forest products for both peace-time and national emergency requirements."

— all of the above, including the map, is taken from a publication called "Behind the Eagle Stand the Forests" put out by Timber Engineering Co., Inc., subsidiary of National Lumber Manufacturers Association, American Forest Products Industries, Inc., Washington, D. C.

Recruiting

The problem of recruiting technical personnel is a complex one these days as any personnel manager will tell you. The unprecedented demand for technical personnel in the chemical industry has seriously taxed our normal sources of supply. Here is what one company has found to be, in every way, a well-rounded personnel program.



THE Second World War has indeed become a race of production, and we have been handicapped by our late entry into the conflict. The United States has had to create in a short time a productive plant of tremendous capacity—a plant which will make all the matériel of war, and the ships to carry them to the far corners of the globe, in quantities unheard of five years ago. The chemical industry has accepted and will successfully meet the challenge in the battle of production, for the spirit of accomplishing the seemingly impossible is its stock in trade.

But the task is of such magnitude that the spirit is not enough. Constantly increasing numbers of technical personnel are needed for chemical industry, and the demand is seriously taxing our normal sources of supply. The men who recruit chemists and engineers for chemical industry have received the full pressure of this demand. It is testing their programs and procedures to the utmost. The recruiting of technical personnel for Monsanto is under the direction of the company's Development Department. The basic procedure which has been evolved over a period of years has proved by experience to be effective in building and maintaining a well-rounded technical organization, and it has thus far successfully accomplished a major expansion of our technical staffs. A well-rounded technical personnel program should, we believe, accomplish these basic functions:

(1) Determine the number and type of men needed
(2) Locate men of the proper qualifications
(3) Determine the interests and talents of such men
(4) Employ them and assign them to a suitable job
(5) Coordinate in general the personnel problems of various company units, in order that the abilities of each individual may be most effectively applied, and that the opportunities for advancement may be effectively distributed throughout the organization.

The unprecedented demand for technical personnel has tended, of course, to place the emphasis on speed and quantity; but we have endeavored, and successfully so. to maintain the same thoroughness in recruiting that we have used in normal times. Such a procedure is obviously best, as long as chemical industry is to do its own recruiting, for this is the best way to find the right person for the right job. The more effectively the technical staffs of each company are expanded, the more effective will the overall effort of the chemical industry become. If the shortage of technical personnel becomes increasingly severe, a certain amount of governmental regulation of the distribution of technically trained people may become necessary, in order to insure that essential operations are properly staffed. If this is ever done, it is hoped that it will be carried out so as to utilize the organizations which many companies have developed to handle personnel recruiting and related problems. To do otherwise would result in unnecessary duplication and lost motion.

Some idea of the magnitude of the task personnel men have had and will continue to have, may be obtained from the fact that the number of Monsanto technical employees has increased 20% since September, 1941. Such an expansion can be carried out effectively only if the supply of men from within and outside of the company is correlated with the demands of the various expanding staffs. By keeping in close touch with each organizational unit of the company, the Development Department determines what the demand for technical men is, and to what extent it can be met by trained and experienced individuals in the company. The unfilled demand must then be met by new employees, the largest single source of which is college graduates, direct from the campus.

Our first contacts with college seniors are usually made at the schools in short interviews (approximately 15 minutes

Technical Personnel at Monsanto

By Robert B. Semple

Development Department, Monsanto Chemical Co.

duration, if possible), the purpose of which is to obtain a rough estimate of those individuals who are interested in employment with Monsanto. These initial visits are carried out by a number of technical men in the company who are interested in personnel work. Such men usually visit schools in their own geographical area, thus permitting a convenient subdivision of assignments. At the initial visit, the student may be given an application blank, if he has not received one already in advance of the interviewer's arrival. The applications are sent to the Development Department, and the interviewer forwards his comments on each man.

The application records and interview memoranda are then reviewed by the Department and applicants in whom we are interested are invited to the main office at St. Louis for follow-up interviews. Here the applicants have an opportunity to meet a number of Monsanto men and to learn more about the company. In turn, we are able to study more fully the qualifications of the applicants. After the comments of the various interviewers have been assembled and studied, a decision on each applicant is made.

After a technical man has accepted employment with Monsanto, the Development Department assigns him to one of the general or divisional departments in the company. At this time the responsibility of the Development Department for the new man terminates, and his department head decides what work he will do. Assignments of new technical men are based on a number of factors, of which the most important are:

(1) Openings in the organization, and the relative need for their being filled
(2) The man's qualifications
(3) The kind of job the man wants.

Monsanto has no formal orientation or training program for new technical employees. The training of a new technical man is under the direction of his superior, who, we believe, can best decide exactly what and how much training the man will need to accelerate his development into a competent and useful individual. Formerly men entering technical sales were given a training course, but this has been discontinued for the duration. The control of strategic chemicals by the War Production Board has eliminated any need for expansion of our technical sales force. Members of the training course were withdrawn to fill the need for chemists and chemical engineers in production and research.

Recruiting tours of the colleges account, of course, for only part of our contacts with technically trained people interested in employment with Monsanto. Unsolicited letters of application, visits to our plants initiated by the applicant, and other miscellaneous sources account for a large number of contacts. In addition, we employ a considerable number of college students during the summer period, preferably between the junior and senior years. The contacts thus made are a valuable nucleus around which the recruiting program can be developed. A breakdown of our personnel campaign for the year 1940-41 on the basis of method of contact is shown below:

	% of Total Employed
1940 Summer employees (college students)	14
College Visits	36
Miscellaneous college contacts	15
Other miscellaneous sources	24
Men with previous experience	11
	100

The present rapid expansion of our technical personnel to meet the war production program in chemical industry and the simultaneous shortage of trained technical people has necessitated a more extended and a more intensive recruiting program than we have ever carried on before. More colleges have to be visited and many more contacts made. As we have said, this program will be carried out for as long as possible with the thoroughness of normal times. Such a course will maintain our technical staffs at maximum effectiveness for the war production effort.

It should be noted that our recruiting of technical personnel is on a "non-professional" basis, in the sense that it is not handled by a company "personnel department." All of the work is done by chemists and engineers on our technical staffs; it is directed by the Development Department because other functions of this department make it especially suited for coordinating the technical personnel program. Interviewing assignments are dispersed over a number of men, so that the time spent on personnel work by each individual does not seriously encroach on his normal duties. Certainly a technical man can estimate most accurately the qualifications of an applicant with technical training, and such estimates are well worth the time required for interviewing. In addition, the applicant can meet at first hand the men with whom he may eventually be associated.

The rapid expansion of our technical staffs has been made possible through first setting up a skeleton framework supported by trained men available in the company. For this task, the centralized role which our Development Department plays in coordinating personnel demand and supply has proved most useful. Expansion has placed new responsibility on everyone in the organization, from the oldest to the newest. The load will become increasingly severe, and new men will have to do jobs which are normally thought to require considerable industrial experience, as well as technical background. We believe that our technical people will rise to the occasion. Whether or not this severe test will be of ultimate advantage to our young technical personnel, cannot be judged now. There is only time to pitch in and do the job to the utmost of our ability and ingenuity.

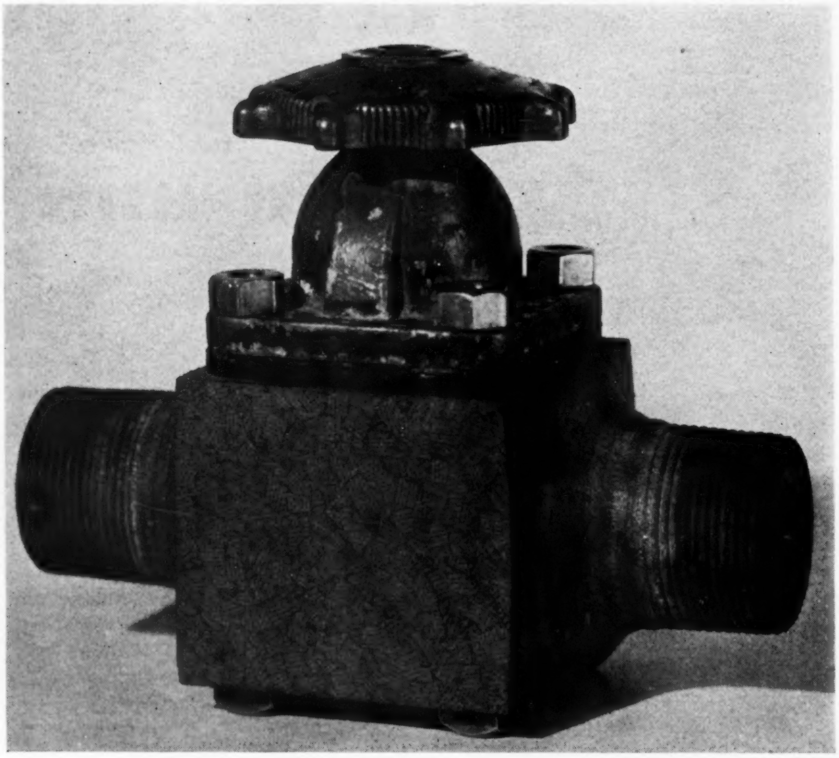


Fig. 1. When a paper company had trouble with valves handling wet chlorine used in paper manufacture, this Micarta valve in which hot metal comes in contact with chlorine gas was the result.

Laminated Plastic Pipe for Chemicals

By V. E. Enz

Micarta Division
Westinghouse Electric & Manufacturing Company
Trafford, Pa.

Laminated plastic piping of Micarta has proven very successful for chemical solutions. Here are some applications in use which may suggest answers to your particular problem.

Fig. 2. Micarta pipe and molded fittings, below, of the type described.

AS a substitute for stainless steel and bronze pipe and because of its excellent machinability, mechanical strength, and acid resisting qualities, Micarta laminated tubing has proven very successful when used for piping chemical solutions. The tubing has a cloth base thoroughly impregnated with synthetic resin, can be made in standard iron pipe sizes, 36" and 48" lengths; straight couplings are made from larger tubing threaded on the inside. The ells, tees, valves, etc. are machined from either macerated chopped molded blocks or in some sizes molded to shape and tapped for pipe thread.

Tests were conducted in the laboratory to determine first, the decrease in strength due to the contact with the chemical solution; second, physical change, weight pick-up or loss and swelling; and third, internal bursting pressure of the Micarta tubing.

The problem is handling 5 to 15 per cent acid solutions up to 50 to 70 lbs. pressure usually at room temperature. There are all sorts of combinations that must be solved, and Micarta can be used in a good many cases. Stainless steel and bronze pipe (silica bronze) is no longer available but these have been replaced with Micarta pipe and the Micarta outlasted anything that has ever been tried. In some cases Micarta shows about three times the life of bronze.

Some of the successful applications already in may suggest solutions to your problem. Wet chlorine gas is used in bleaching process in the manufacture of cigarette paper. Micarta pipe is handling this at 70 lbs. pressure. A real problem was solved in this set-up by the use of the valve shown in Fig. 1. The flow was shut off with this valve, and no wet chlorine gas comes in contact with the metal.

Micarta replaced Silica Bronze piping in the handling of kaolin clay solutions on a clay filter press. Due to the acid and various chemicals in the clay, they soon deteriorate the metal pipe. This solution is sulfuric with a PH value of from 4 to 5. The Micarta pipe takes the water out of the filter, and lasts 2 to 3 times longer than the best (three to five months) life of the bronze pipe.

Another application in service is in connection with a bleachery handling where sulfuric acid is piped from the storage tank to the processing machines in the bleachery. The solution is approximately 10 to 15 per cent acid and at room temperature. It is mixed in the storage tank and flows by gravity through the Micarta pipes to the processing machines.

Further trials are in process for piping mine water from a coal mine with the problem of reducing or eliminating the amount of corrosion on the inside of the pipe.

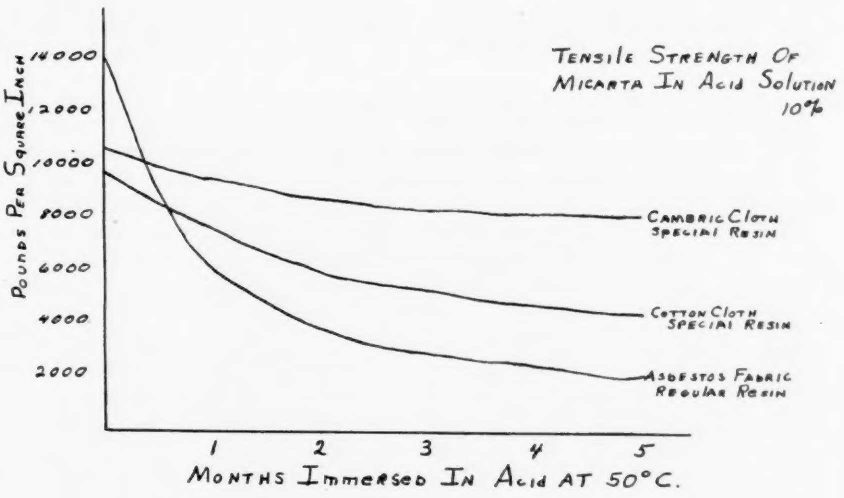


Fig. 3. Tensile strength immersed in acid at 50°C.

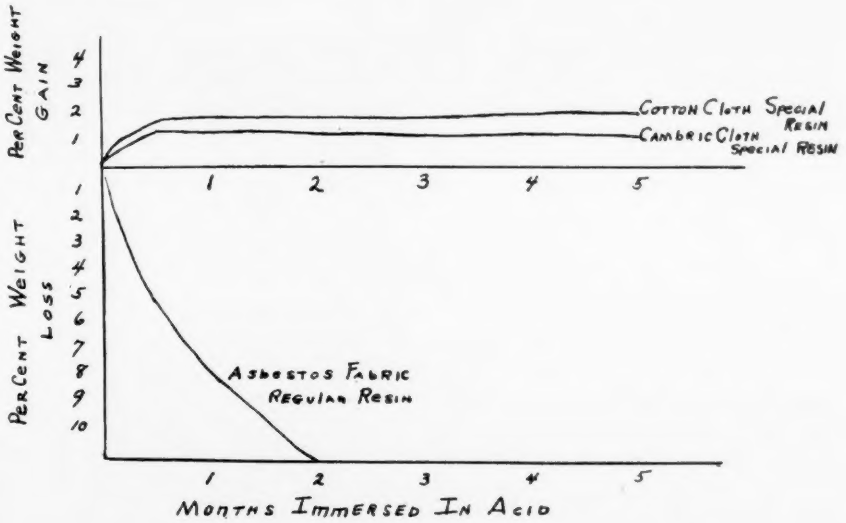


Fig. 3. Tensile strength immersed in acid at 50°C.

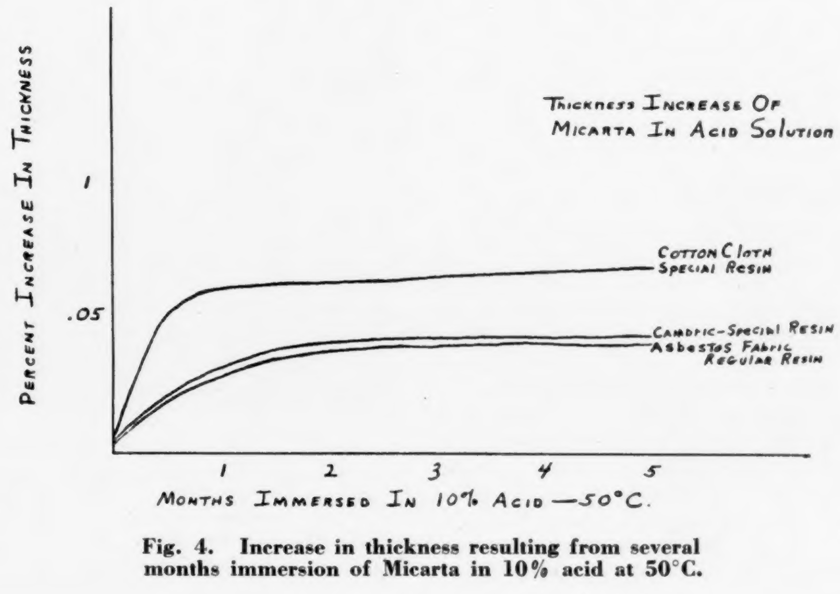


Fig. 4. Increase in thickness resulting from several months immersion of Micarta in 10% acid at 50°C.

BETWEEN THE LINES

We pause this month, in the midst of one of the most confused situations in industrial history, to take stock of what has been done toward developing that sizable synthetic rubber program you've heard about. One of the hottest topics in Washington, some are calling it "The Great Rubber Scandal." This review will help your evaluation. Even President Roosevelt has remarked that there are more kinds of rubber "experts" than there are pickles.

A nation on wheels demands rubber tires. If natural rubber is not at hand, then some other kind of rubber will have to be found. The public does not care what kind of rubber this is, just so that it is abundant, available soon, and will serve its purpose.

Out of these fundamentals one of the most confused situations in industrial history has arisen, because in this country the public will be served, and those most interested in serving it are in office and want to stay there. Hence there has been an exhibit of national falling-over-one another to get rubber.

Some facts in the national effort to produce rubber are pertinent at this stage, as a sort of stock-taking in the midst of confusion. Reviewing the approach to production facilities first, the Senate has passed and sent to the President a bill that in substance proposes to subsidize through Government funds, new plants to make rubber using grain alcohol.

Work was halted on new plants being built in the West to produce rubber using the oil process. There is cleavage nationally over whether to use one process or another. There are charges of all kinds, only one of which is that sugar is being diverted from domestic use to make alcohol, when grain would serve.

Generalizing a moment, some answers are in order;

1. No sugar has been used for alcohol since January.

2. There will be ample supplies of alcohol from grain in the coming year.

3. The 800,000 ton rubber program of the Government will meet currently anticipated military requirements, but will do comparatively little to help the civilian, now using the last natural rubber tires he is likely to see for some time.

From this it will be obvious that the public is right—what it wants is synthetic rubber production by the quickest, if not necessarily the cheapest method.

According to Donald Nelson, chairman of War Production Board, alcohol will be the main reliance for rubber production in 1943. He is opposed to the new plants program comprised in the recently-enacted bill however, because of the drain on critical raw materials needed for more vital uses than civilian tires.

For all of the criticism it has taken, Standard Oil of New Jersey, according to its president, William S. Farish, views the problem essentially as does the public. Naturally its processes are based on oil and oil by-products.

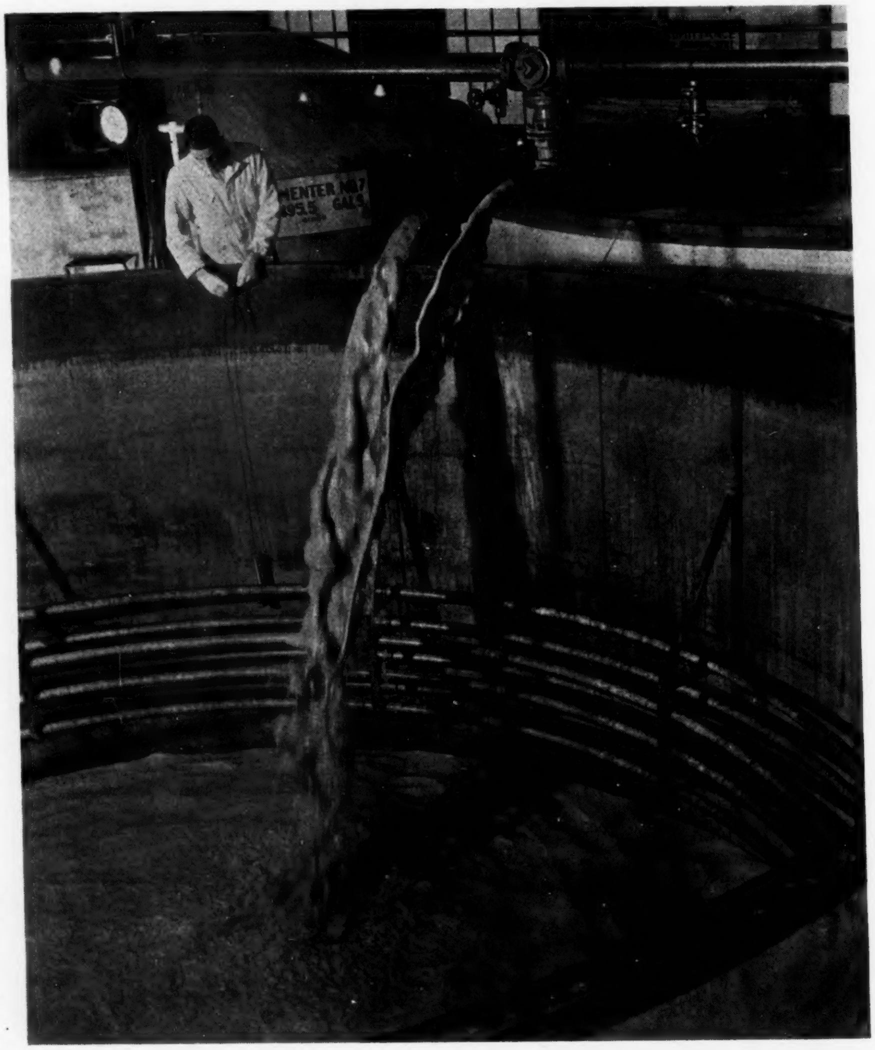
This company is producing about 8½ tons of butadiene per day from oil, in a new plant, which by October 1, will be running at capacity, it is expected. This will be 13 or 14 tons per day. This butadiene is being used to make 10 tons per day of Buna type synthetic rubber.

By November this company expects to have in operation a second plant of the same design, capable of an output of 30 tons per day of butadiene, using oil, and this company had other plants under construction for the Government, which may be the ones on which work was recently ordered halted. These plants would have a total capacity of 45,000 tons per annum of butadiene, using an improved process.

Output of the present plant goes into Buna-N and Buna-S rubber produced at the same refinery Buna-S rubber produced at present is being used in Government tests. Part of this company's butadiene output is being sold to two rubber companies operating Buna plants of their own.

The process projected for the two plants mentioned that were being built for the Government contemplates use of the raw material butylene, the oil product most nearly resembling butadiene, and easiest to convert to butadiene.

Ample butylene can be found in the re-



A giant fermenting tank at a Schenley Distillers Corp. plant is shown here being filled preparatory to putting yeast at work to aid in converting surplus grain into alcohol for munitions. The coiled cooling pipes which line the tank will be below the surface when it is filled and will maintain proper temperatures to speed alcohol production. The most important topic in Washington today is not only how much rubber will be made from alcohol but what raw materials will be used to make the alcohol—petroleum gases, sugar, grain or molasses.

How the Newspaper Cartoonists See the Rubber Situation

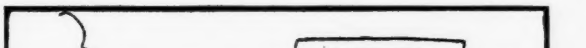
TIME TO RETIRE.

—From The New York Times

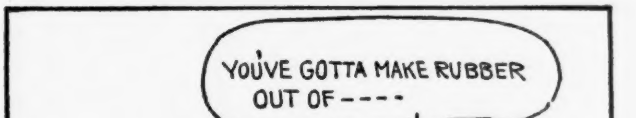
Bishop in The St. Louis Star-Times

"Won't somebody invent a new faucet?"

Aw, Give the Poor Bride Time; She'll Soon Learn to Cook!



—From The Cleveland Plain Dealer.



Thomas in The Detroit News

"Chemistry and politics."

fineries involved, to produce 45,000 tons annually of butadiene, it is believed, without interfering with production of 100-octane aviation gasoline. In connection with the latter point, pressure for production of 100-octane gasoline is a factor that has to be considered.

Standard's contribution in the general handling of the problem of conversion of butylene to butadiene has development of a catalyst to allow this conversion with comparatively simple equipment.

Prior to the war the company devoted much time to this one item, and is now satisfied with the result so far as immediate production is involved. The company denies that it champions any particular process, or even that it advocates the use of its own methods rather than producing butadiene from alcohol or by other oil processes.

Considerable confusion surrounds the Government's program, but essentially it calls for 700,000 tons of Buna-S rubber, 60,000 tons of Butyl rubber, and 40,000 tons of Neoprene; a total of 800,000 tons. Materials for 700,000 tons of Buna-S rubber are calculated about as follows;

Grain for production of 210,000 tons of butadiene, and some for production of styrene; benzol from the coal industry for a small proportion of butadiene and the bulk of the styrene; refinery gases for 410,000 tons of butadiene and some raw materials for styrene. (From petroleum industry.)

To a large extent butadiene production by the petroleum plants will be in makeshift installations, designed to save the drain on critical materials. This brings in the Chemical Branch of War Production Board, since it has borne a considerable part of criticism from one quarter or another for delay in getting alcohol production going. To a considerable extent, it may almost be said that a good part of this augmented alcohol production from grain, will likewise be in adapted plants, with spare equipment.

The Branch has had the burden first, of determining what alcohol would be needed, next where to get it, then arranging to get it. For a time sugar seemed the best available raw material. Today only plants in the Gulf region are using sugar, and for special reasons. Generally speaking, grain is being universally used by other plants.

However, some eastern commercial plants needed to be adapted to produce alcohol from grain. This ordinarily spelled a new demand for critical raw materials. Under the auspices of the Branch however, apparatus is being found among distilleries in various parts of the country, and being transferred to the plants where needed.

Currently this is the cause of an outburst in Congress among certain members, on the ground that the WPB is fostering the disruption of the California, or other western states' distilling industry. This is only a fresh difficulty of the series of problems, however.

Conversion of distilled beverage spirits plants to commercial alcohol production has entailed rather involved legislative changes in Treasury statutes and other laws which hedge the beverage distillery industry operations normally. Some of these laws have only recently been signed, so that only gradually have some plants converted, as the statutes were revised permitting them transfer production to alcohol, transport it to rectifying plants, and adjust tax payments, among other details.

Shipping difficulties both at home and abroad have interfered with some aspects of the program. Only recently have some substitute materials been adopted for those in more critical demand for certain requirements, tanks, etc., where practicable.

Getting rubber, in short, has started, but the road ahead is long and full of rocks, yet, according to present facts.

At the turn of the month the whole rubber situation was thrown into still greater confusion with the injection of the claims for the Houdry Process. This process claims a short-cut method of cracking petroleum to produce butadiene and is said to be a simple adaptation of the well-known Houdry catalytic process for manufacturing high-octane aviation gasoline from crude oil.

It is said that Houdry has been trying to interest officials in Washington for months but without success. The company a few weeks past introduced a large advertising campaign explaining to the public the advantages of the process.

The Houdry process calls for taking butane from natural gas, or from cracking petroleum and to turn it into butadiene in only two steps.

Houdry claims that 15 standard-size Houdry Process plants could be constructed for \$12,000,000 each, as against \$25,000,000 for a single plant using the other petroleum process. Further Houdry claims a time advantage stating that it would require nine months to build one of his plants as against 16 months for the plants using the other petroleum process. He further states 15 of his plants could provide enough butadiene to produce one million tons of rubber, would save money and use one-third to one-half less steel.

It is reported that Rubber Reserve officials have contended that the process was insufficiently developed to warrant adoption. Houdry has countered that changes made were essentially improvements on the basic process. In the meantime 14 engineers of the Phillips Petroleum Company at the request of Rubber Reserve are said to have been studying the process at the Houdry laboratories at Marcus Hook, Pa.

It has been said that the Houdry Process will make possible finished Buna-S rubber as low as four cents per pound. Other oil men say that this is an amazing low figure and they are frankly skeptical. At the month-end one report out of Washington stated that the Houdry Process had been accepted. Later this was denied.

Those who are charged with developing a sizable synthetic rubber program in Washington are sitting on the "hottest seat" ever seen in the Capital. With thousands of chemists feverishly working on the problem from many different angles it is to be expected that technological advances will come along with amazing and bewildering frequency. Where to "freeze" and to go ahead with plant erection of a size necessary to assure 800,000 tons of synthetic rubber is a difficult question to answer. Certainly there are not sufficient raw materials in the way of steel, copper, etc., to permit adoption of all the processes offered in the volume that the proponents of each process desires. No matter what is done it will be open to attack and with a certain amount of justification.

But it takes time to erect plants (no matter what process is used).

In all of the controversial angles of the rubber program little has been said of one bottleneck—competent technical men to operate the plants. Surveys show that large numbers of chemists and chemical engineering students now in their senior and junior years are being taken into the army under plans which call for their induction when they graduate. The time is coming when the disastrous effect of this policy will become self-evident.

The following are the technical advisers of the Rubber Reserve Company:

R. P. Dinsmore, Goodyear Tire and Rubber; Per K. Froelich, Standard Oil Development; J. N. Street, Firestone Rubber; H. K. Boyd, Hi-Car Chemical; W. L. Semon, B. F. Goodrich; W. A. Gibbons, United States Rubber; Stanley T. Crossland, Rubber Reserve; Dr. E. R. Weidlein Rubber Reserve and W. P. B., and F. H. Carman, Secretary of Rubber Reserve.

As of July 10 the following consultants of D. R. Weidlein on rubber:

E. W. Reid, War Production Board; O. E. May, Department of Agriculture; Wright W. Gary, Office of Petroleum Co-ordinator; E. B. Babcock, Firestone Tire & Rubber; John N. Street, Firestone Tire & Rubber; E. P. Dinsmore and C. W. Walton, Goodyear Tire & Rubber; W. L. Semon and C. F. Fryling, B. F. Goodrich; S. Meuser and W. A. Gibbons, United States Rubber; James H. Boyd Jr., Hi-Car Chemical; E. R. Bridgwater, Du Pont De Nemours; Willard H. Dow and Mark E. Putnam, Dow Chemical; Charles A. Thomas, Monsanto Chemical; George Curme and H. E. Thompson, Carbide & Carbon; Fred Denig, Koppers; N. K. Chaney, United Gas Improvement; Gustave Egloff, Universal Oil Products; Percy C. Keith, M. W. Kellogg Company; A. Henry Schutte, the Lummus Company; Carl E. Finsterbush, Stone & Webster Engineering; W. P. Gage and D. Pyzel, Shell Chemical; M. J. Rathbone and H. J. Voorhies, Standard Oil Company of Louisiana; George Oberfell, Phillips Petroleum; Herbert Henderson and Kenneth M. Watson, Gulf Oil; T. M. Delbridge, Atlantic Refining; Dubois Eastman and K. E. Mackenzie, Texas Company, Porter Langfitt, Pure Oil; Wilbur Burr, Socony-Vacuum (Magnolia); Ed W. Isom, Sinclair Refining; W. B. Plummer, Standard Oil Company of Indiana; Robert Russell, Willard C. Ashbury and P. K. Frolich, Standard Oil Development.

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Distillation Range ***(corrected)***

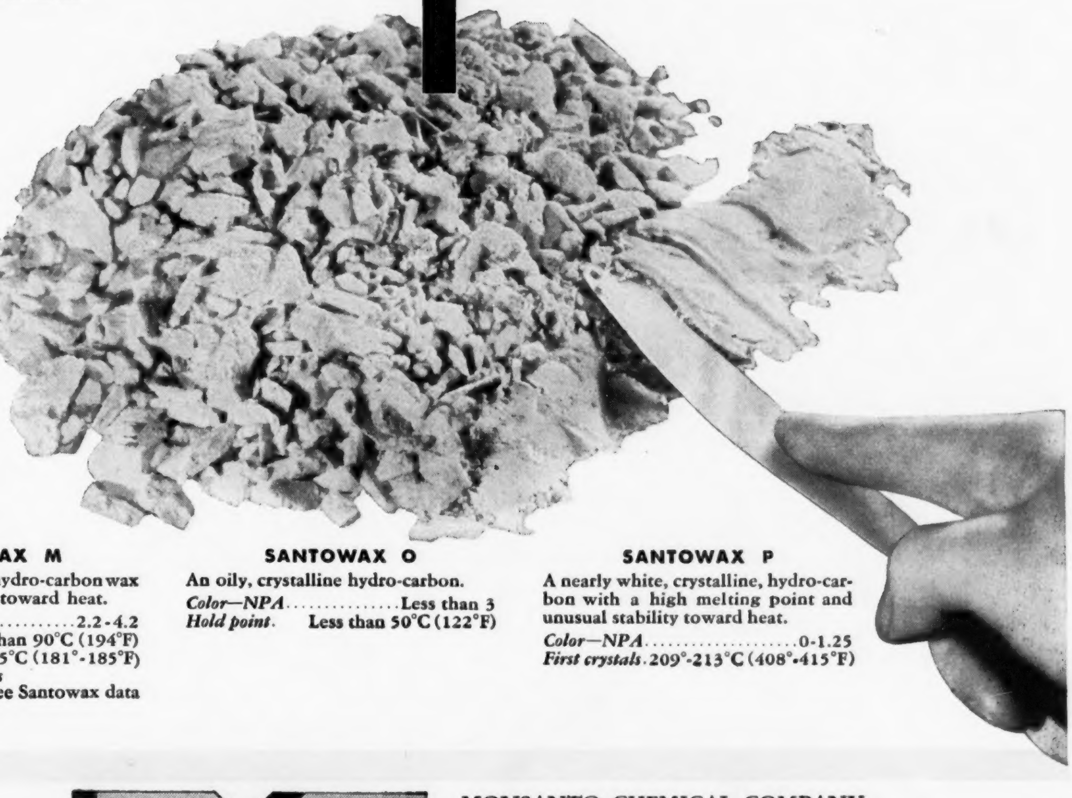
First drop .... 365°C (689° F)
80% point .... 402°C (756° F)

Solubility	Grams Santowax per 100 ml. of solvent *at 25°C*	*at 75°C*
95% Alcohol	0.03	1.3
Benzene	5.00	34.0
Fuel oil, API 36° SUS 100°F—38	1.66	8.4
Turpentine	1.35	4.3 (50°C)
Trichlor benzene	5.40	22.3

Coefficients of Thermal Expansion

Temp. Range	Coefficient of Cubical Expansion *Vol./unit Vol./deg. C*	Coefficient of Linear Expansion *Length/unit Length/deg. C*
25—60°C	8.3×10^{-4}	2.8×10^{-4}
60—77°C	11.5×10^{-4}	3.8×10^{-4}
25—77°C	9.4×10^{-4}	3.1×10^{-4}

Comparative Hardness (Smaller figure denoting greater hardness)	Penetration cm. $\times 10^{-2}$
Santowax (1½ hrs. after melting)	74
Santowax (40 hrs. after melting)	27
Santowax M	19
Yellow Ceresin	37
Montan Wax	27
Candelilla Wax	16
Carnauba Wax	14



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First crystals ... Less than 90°C (194°F)
Hold point ..... 83°-85°C (181°-185°F)
Comparative hardness .... See Santowax data

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An oily, crystalline hydro-carbon.
Color—NPA .... Less than 3
Hold point. Less than 50°C (122°F)

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Color—NPA 0-1.25
First crystals. 209°-213°C (408°-415°F)

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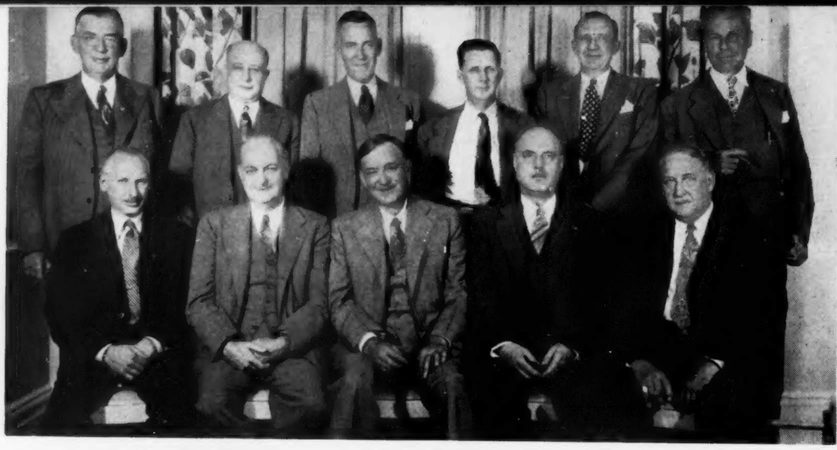

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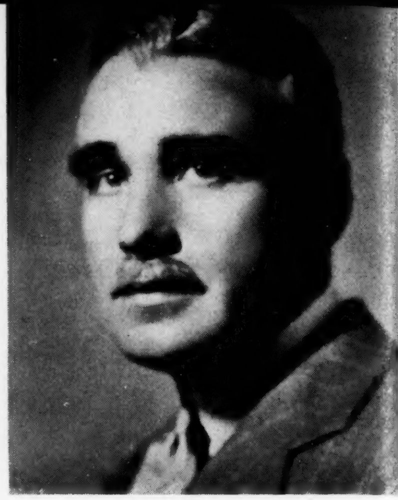

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Headliners in the News

(1) Dr. Evan C. Williams, widely known international research chemist and chemical engineer, has been appointed chemical director and vice-president of General Aniline & Film Corp. (2) Three hundred and forty-five years of service with E. I. du Pont de Nemours & Company—an average of over 31 years each—is the record of these eleven men photographed at the recent Branch Office Managers meeting of the Electrochemicals Department in Wilmington, Delaware. Back row, left to right: A. C. Stepan, Chicago; C. Dittmar, Cleveland; R. H. Dufault, New York; L. R. Kennette, Charlotte; A. R. Tucker, Philadelphia; W. P. Stoll, San Francisco. Front row, left to right: H. A. Schumacher, California; E. C. Schwarzenbek, Newark; G. W. Goerner, Boston; C. Seiler, Baltimore; G. A. Bode, New York. Schumacher is Manager of the West Coast plant, and Bode is Manager of Miscellaneous Sales. The others are branch office managers. (3) J. F. McNamara, mill products sales manager of International Nickel Co., has been made chairman of the board of directors of Harvill Aircraft Diecasting Corp. (4) John W. Livingston, vice president and member of the board of directors of Monsanto Chemical Co. and general manager of its organic chemicals division, has been released by his company to the Rubber Reserve Co. which he has joined as consulting engineer. (5) Stuart Cramer, professional magician on the advertising staff of Arco Co., Cleveland, has been released from other duties and is spending an increasing amount of time entertaining army trainees at camps in the middle west. (6) Julius A. Berninghaus, general manager of sales of the organic chemicals division of Monsanto Chemical Co. has been made general manager of the division, succeeding John W. Livingston (4).

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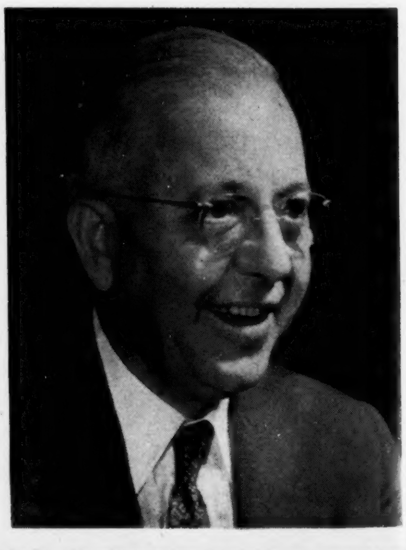

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Chicago Rubber Group Holds Its Golf Outing

Chicago Rubber Group held its golf and dinner outing June 27 at the Lincolnshire Country Club, Crete, Ill., about 50 miles south of Chicago. C. I. sent a representative to join in the festivities which included golf, cards, swimming, tennis, riding and dancing. He took these pictures at the affair.

(1) O. J. Urech, Bingham Sons Mfg. Co., presents a wrist watch to Dr. H. A. Winklemann for his services as past chairman of the Chicago Rubber Group and for his constructive help. (2) Calvin Yoran, Featheredge Rubber Co., chairman for the 1942 season of the Rubber Group. (3) James Sheridan, New Jersey Zinc Co., chairman of the 1942 outing, who was responsible for the success of the party. (4) C. M. Baldwin, Chicago district salesmanager of United Carbon Co. Inc. (5) Left to right O. H. Tager, Chicago office in charge of industrial sales, Shell Oil Co.; Jack Gallagher, Chicago Belting Co.; G. K. Kimble, Midwest Rubber Reclaiming Co., St. Louis; E. L. Stanger, Chicago Belting Co.; Tom O'Connor, Great Lakes Solvents; Bruce Hubbard, Ideal Roller Mfg. Co., secretary of the association. (6) Ben Lewis, Wishnick Tumpeer, Inc., Chicago Branch, former secretary of the group. (7) Bruce Hubbard poses after a strenuous round of golf. (8) Left to right, Al Puschin, National Motor Bearing Co.; E. F. Frost, Frost Rubber Co.; and Herman Boxer, Western Felt Works.

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Chemicals

FOR PULP AND PAPER

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SULPHUR • CARBON TETRACHLORIDE

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What's New in the Chemical Industry

Recently opened to the public in Chicago's famous Museum of Science and Industry is the above exhibit planned and executed under the supervision of the technical staff of Victor Chemical Works. Built at a cost of over $30,000, the display tells the complete story of phosphorus and the importance of its compounds in the service of mankind. Museum occupies the reconstructed Fine Arts Building of the World's Columbian Exposition of 1893 in Jackson Park. Strictly a "must" during your next stay in Chicago.

Scrap Rubber--How it is Processed

Old tires and inner tubes by the thousands in addition to almost any article containing rubber are now used in making reclaim rubber. This is a general view of the piles of scrap at reclaim division of B. F. Goodrich Co., Akron.

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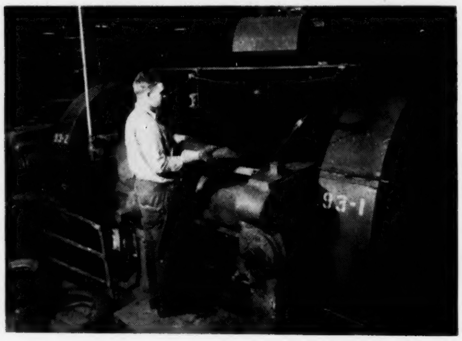

Grinding the old tires, from which the beads have been removed, is the first operation in the making of reclaim rubber. Pulverized material is then placed in a de-vulcanizer where caustics eat the cotton from the rubber.

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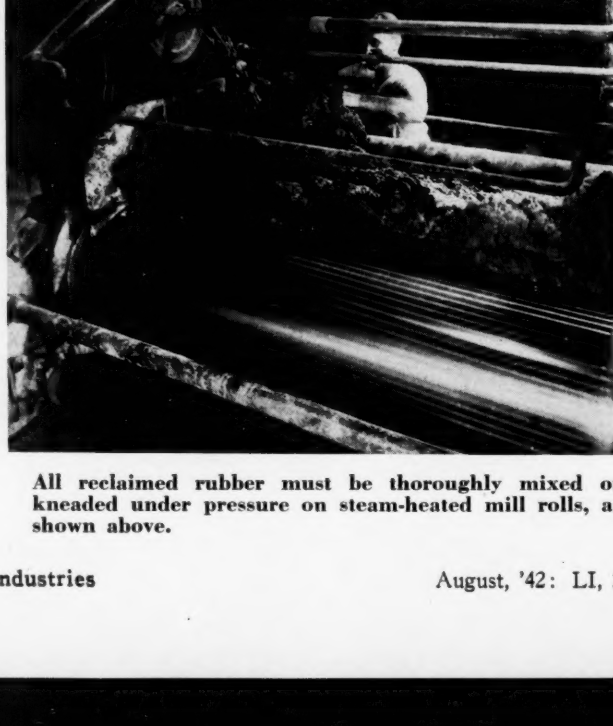

All reclaimed rubber must be thoroughly mixed or kneaded under pressure on steam-heated mill rolls, as shown above.

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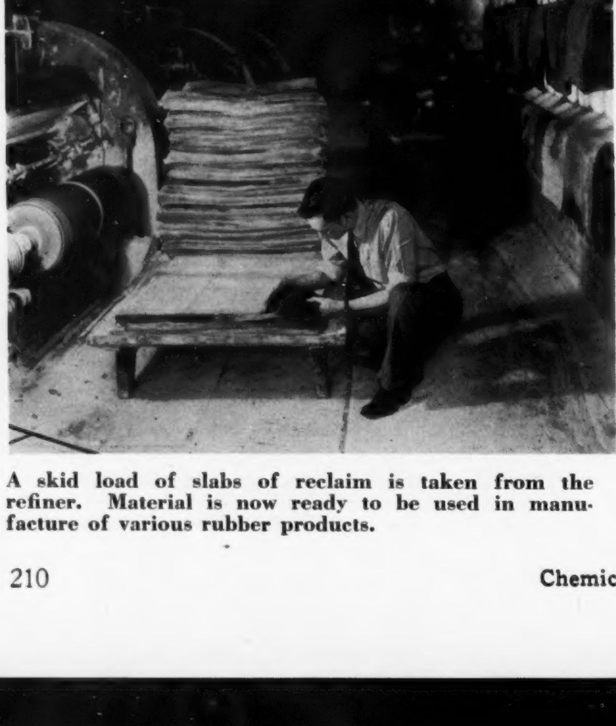


A skid load of slabs of reclaim is taken from the refiner. Material is now ready to be used in manufacture of various rubber products.

Invitation . . .

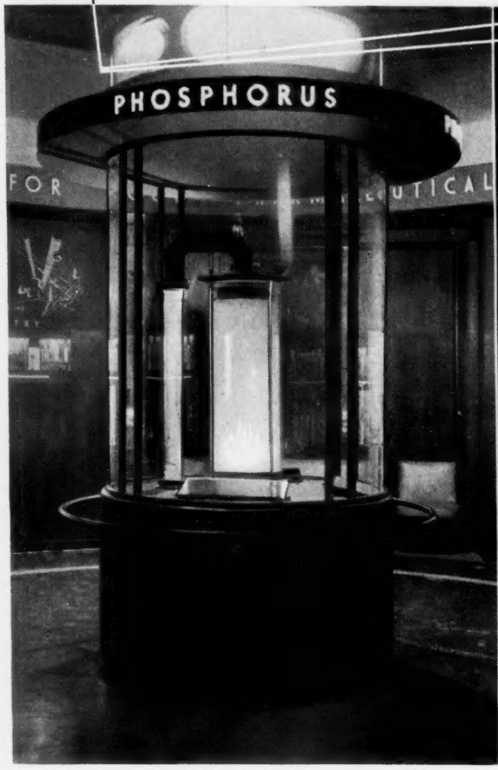
Victor Chemical Works Exhibit

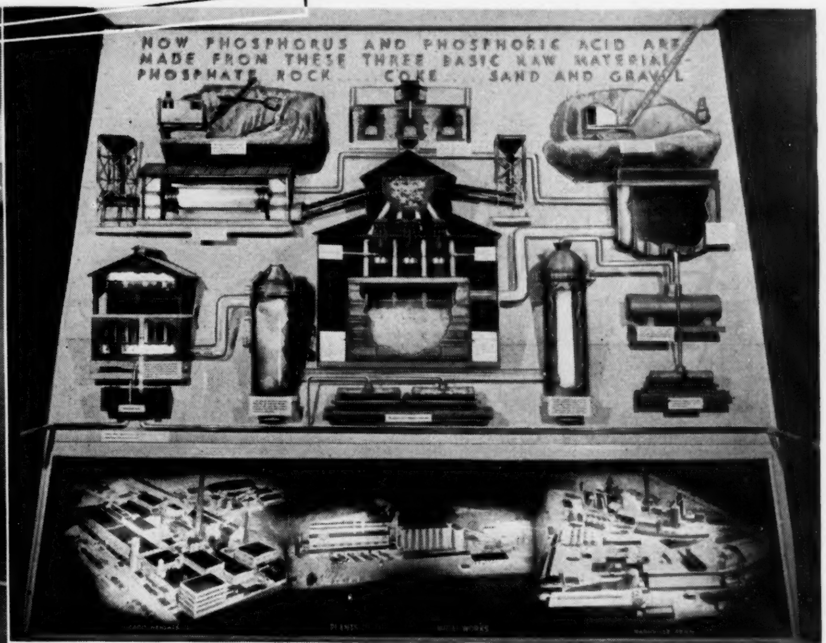
"The Story of Phosphorus"

Museum of Science and Industry

Chicago, Ill.

You are cordially invited to inspect the recently completed Victor Exhibit in Chicago's famous Museum of Science and Industry. It tells the story of phosphorus . . . and the important role played by phosphorus compounds in serving mankind . . . through a miniature pilot plant in actual operation, colorful translites, and ingenious working models that operate at the push of a button. Two of the many displays of interest to layman and technical expert alike are illustrated below.





Above, left—Outstanding in the exhibit is this glass-enclosed pilot plant . . . a simplified version of the most modern and efficient phosphoric acid producing unit in existence. Here, for the first time, the manufacture of phosphoric acid can actually be seen . . . an operation heretofore concealed within the confines of brick and steel.

Above—In this animated production diorama . . . complete with miniature steam shovels in simulated action, model furnace, condenser, burner, hydrator, precipitator, storage tank, tank cars, etc. . . . is told the story of phosphorus from raw phosphate rock to ultimate conversion into a host of phosphatic compounds.

VICTOR *Chemicals*

In Commercial Production

- Phosphoric Acid
- Pyrophosphoric Acid
- Polyphosphoric Acid
- Phosphorus
- Phosphorus Oxychloride
- Phosphorus Trichloride
- Phosphoric Anhydride
- Alkyl Acid Orthophosphates
- Ammonium Phosphates
- Alkyl Ammonium Phosphates
- Fireproofing Compounds
- Calcium Phosphates
- Magnesium Phosphates
- Potassium Phosphates
- Sodium Phosphates
- Sodium Pyrophosphates
- Potassium Pyrophosphate
- Alkyl Acid Pyrophosphates
- Formic Acid
- Aluminum Formate
- Sodium Formate
- Sodium Boroformate
- Oxalic Acid
- Calcium Oxalate
- Sodium Oxalate
- Magnesium Sulphate
- Sodium Aluminum Sulphate
- Ferrophosphorus

VICTOR *Chemical Works*

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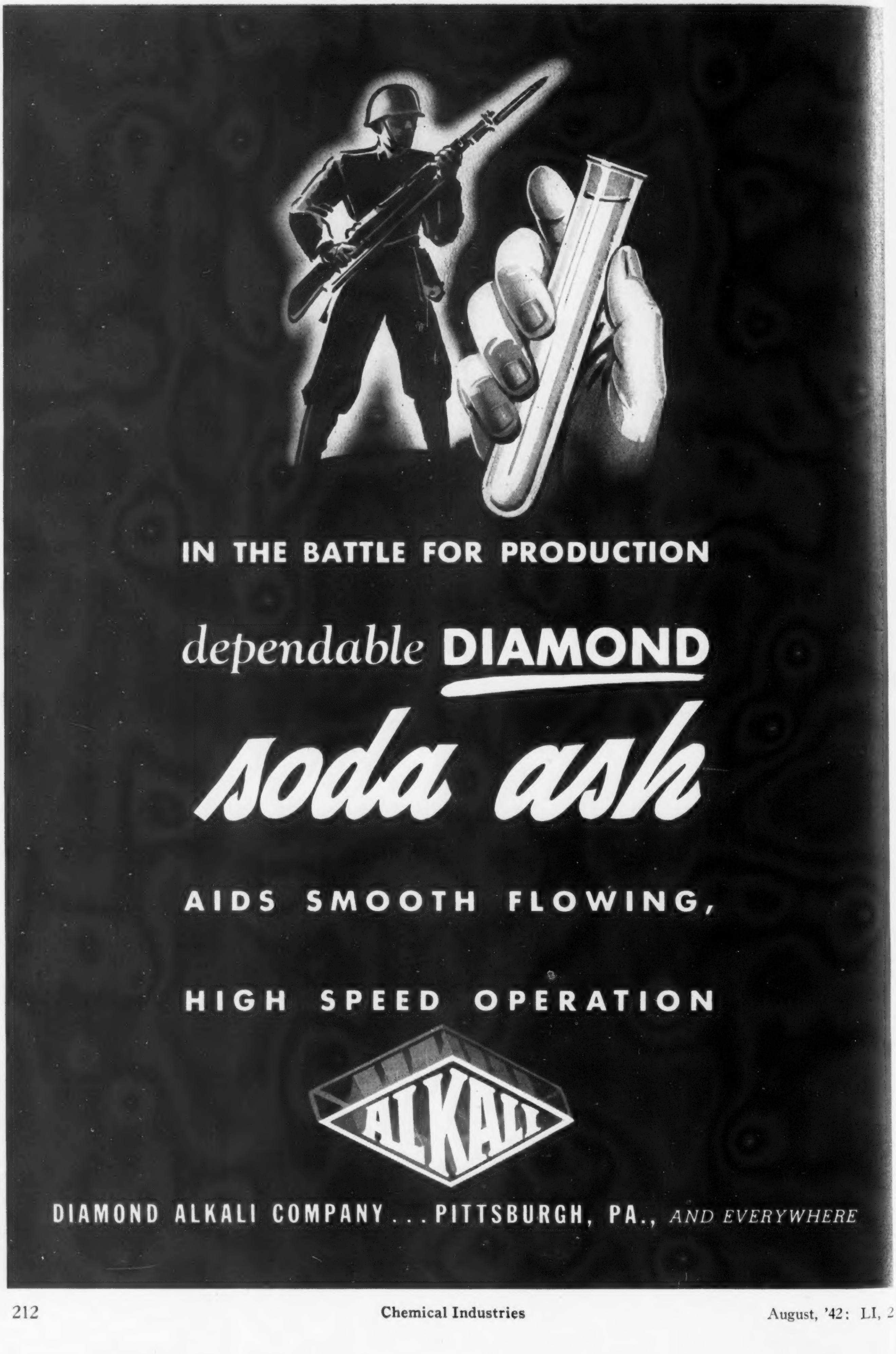
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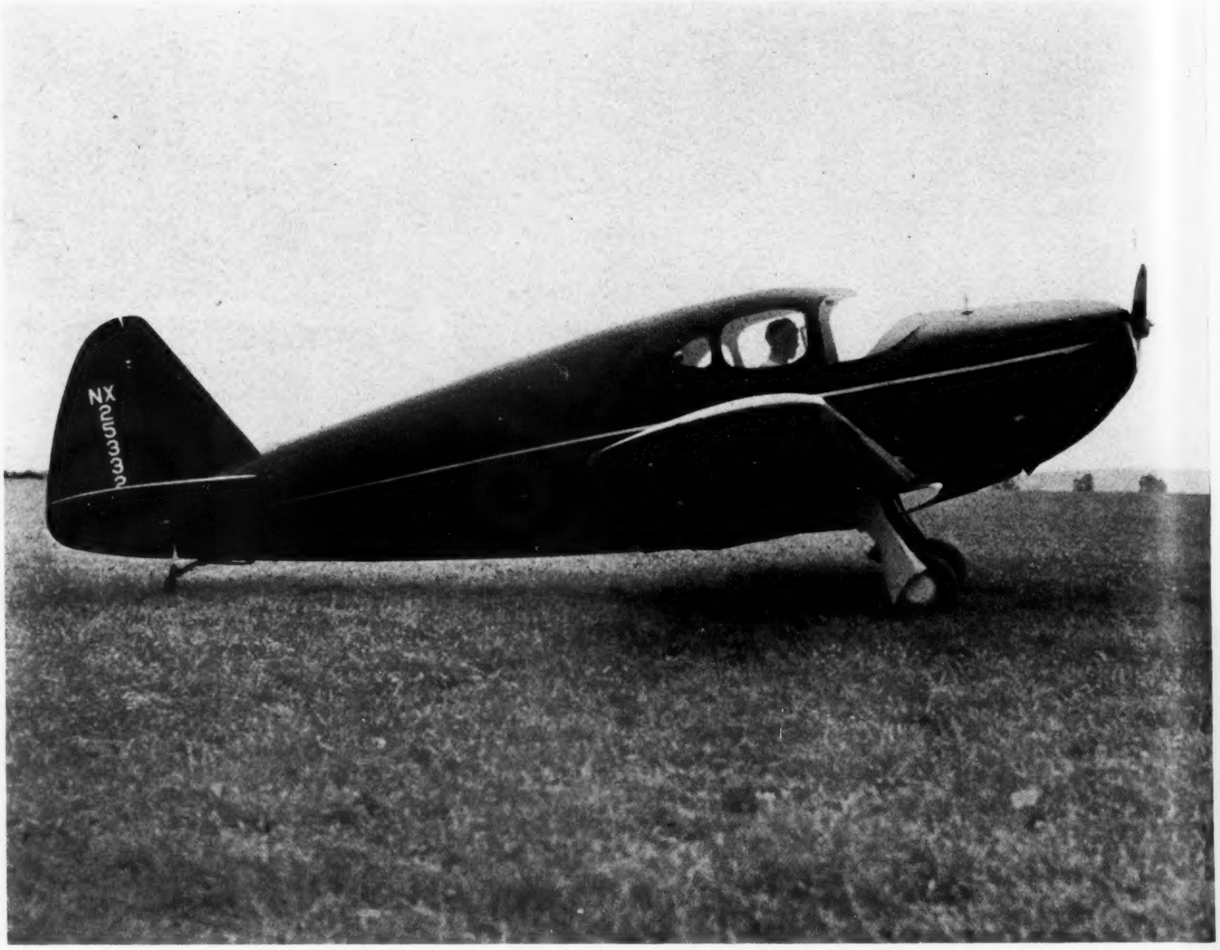
dependable DIAMOND
soda ash
AIDS SMOOTH FLOWING,
HIGH SPEED OPERATION
ALKALI
DIAMOND ALKALI COMPANY . . . PITTSBURGH, PA., AND EVERYWHERE

NEW CHEMICALS FOR INDUSTRY

New Mul-T-Jet nozzle tips for use on standard fire-fighting equipment are molded of shatterproof plastic Tenite, products of Tennessee Eastman. Nozzle cuts water into tiny streams that cross each other and produce artificial fog at only the average pressures.

Digest of Chemical Developments in Converting and Processing Fields

THE FUTURE



Plastic plane recently completed of the type which will be used by the government for training purposes as a conservation move on strategic materials.

Four parts for refrigerators made of Lustron, Monsanto polystyrene plastic.

Saran may be used for dipping acids with this type of dipper.

Pump impeller made from Durez plastics.

OF THE PLASTICS INDUSTRY*

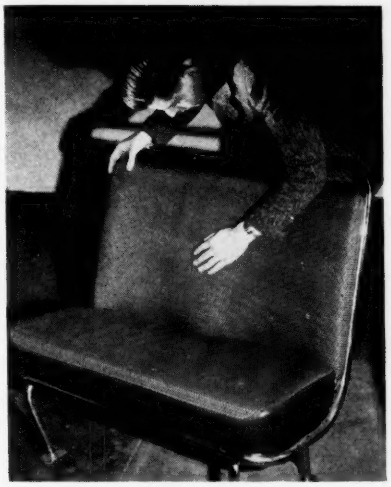
By Robert P. Chew

The future of the plastics industry—as this article so ably points out—seems to be a course halfway between the prediction of the prophets and the present status of the industry. The years following the war should see a continued growth in this industry which may well become equal in size to our principal manufacturing industries.

* *Digested from a thesis submitted to the Department of Economic and Social Institutions, Princeton University, April 14, 1942.*

Ford has designed a plastic automobile body made from such ordinary farm crops as wheat, flax, raimi, hemp and spruce pulp.

Furniture made with Plexiglas, a product of Rohm and Haas.



Seat cover made of Saran, Dow Chemical's Product.

THE plastics industry is not a clearly defined industry like that of steel or automobiles. Plastics are employed in many fields. The chemical industry itself uses its plastics in its own establishments and supplies large quantities to allied industries. These substances of synthetic organic origin have had profound effects on the automobile, radio, paint and varnish, telephone, photographic, and numerous other industries. They have become a substitute in many uses for such articles as steel, copper, rubber, wood, glass, and aluminum; and are therefore familiar objects in our daily contact with industry, home, communication, or personal possessions.

Since the discovery of the two original plastics, pyroxylin and phenolic resin plastics, numerous other types and varieties have been found. Today there is a plastic for practically any and every use. Because of certain physical and chemical characteristics, some of their products are as durable as steel; others have the lightness of aluminum. Because of their wide distribution, diversity, and great utility, the importance of plastics in everyday life is becoming increasingly apparent.

The remarkable growth of plastics, both in respect to amount produced and diversity of application, has taken place in the last decade. The advance of this industry has been so rapid, so kaleidoscopic that a great amount of confusion exists in the minds of those not conversant with the inherent advantages of plastic materials as to just what the industry consists of.

The plastics industry has spent large sums of money in the last few years on trying to educate the public as to what plastics are. National advertising, displays, manufacturer's associations have all been used as means by which to disperse information about plastic products.

The present national emergency has done much to bring the attention of the American industry and public to bear on the plastics industry. There have been innumerable articles in newspapers and magazines of recent months discussing the use of plastics as ersatz substances. Synthetic rubber, a plastic, is of great importance to our war effort. Acylate plastics are used to protect airplane cockpits and gun turrets; laminated synthetic resins are molded into fuselages. In short, industry and consumers alike are turning to the plastics industry for essential material as well as substitutes to take the place of shortages caused by war production.

The future of plastics lies in the development of large scale industrial applica-

A new type of general utility lantern recently developed with an all-Tenite housing. Lantern is manufactured by Focal Co., Tenite housing is molded by Modern Plastic Co. of Tennessee Eastman's product.

tions. A decided trend toward such uses has been particularly marked in the last two years. The current defense and war programs have been the greatest stimulus to such a trend since the manufacturers got under way. They have opened up possible outlets necessary for a continued expansion of the industry.

Before discussing newly developed industrial uses, however, a brief examination of foreign markets should be made. Although they in no way compare with home markets as potential outlets for plastics, a large export trade began to develop just before the entrance of the United States into the present war. An investigation of South American trade in plastic molding materials and products shows the possibility of future expansion of our export trade.

Argentina is the most important market in South America. Production of organic plastics in that country is still in a very preliminary stage and it will be some time before local producers can supply any large share of the demand.[1] Argentina is an important producer of casein, but practically all of it is exported to the United States. Domestic production of galalith and synthetic resins has been encouraged by increasing prices and the difficulty in getting deliveries from Europe. As yet, however, it is still in the experimental stage.[2]

The domestic production of plastic materials has not yet reached the point where any definite distribution channels have been established. Imported materials are generally represented by local agents, who carry samples and solicit orders from consumers, with most shipments being sent direct. Any consumer not large enough to place a minimum order for direct shipment is obliged to purchase small lots through limited wholesale outlets. A large part of the orders is on a contract basis as most of the finished goods are accessories to or components of other commercial products. Consequently, most orders for plastic articles are placed with the local representative of foreign manufacturers rather than through wholesalers.

In normal times Germany and Czecho-Slovakia were the leading suppliers of finished articles, with Japan also prominent in pyroxylin plastic novelties. The United States was not an important supplier of either plastic materials or finished articles in the Argentine market, the main reason being that European prices usually were much lower. Also, British and German firms offered more liberal credit terms. Since the beginning of war, Germany and Czecho-Slovakia have ceased to supply the Argentine market. While there have been occasional delays in receiving orders from the United Kingdom, there is no indication that the British share in this trade has declined.

One of the outstanding factors restricting our exports to South America in the past has been the Argentine system of exchange control. This favored those countries with which Argentina had a favorable balance of trade or with which it had negotiated trade agreements. Until recently it was possible for most European merchandise to come in at a favorable exchange rate, whereas a large part of imports from the United States had to pay an extra differential which raised the "landed cost" of American goods by 20 per cent.[3] This was subsequently changed so that the same rate of exchange applied to a given class of imports regardless of origin, but it was supplemented by a quota system unfavorable to the United States.

During the first part of 1939, for instance, exchange permits were denied on plastic materials from the United States; later in the year an 80 per cent quota of previous imports was established. Still later, when it became apparent that there might be difficulty in getting supplies from Europe, American plastic materials could be imported without restriction. This varying and unpredictable treatment was not conducive to steady patronage on the part of local consumers.

Most of the business formerly held by Germany, Japan, and Czecho-Slovakia has been diverted to American firms. What is needed to maintain this share and keep it is competitive prices and more liberal credit terms. American businessmen have an excellent opportunity under the present circumstances to build up commercial goodwill in Argentina and assure themselves of an expanding export trade when the present war is over.

The above also holds true for the rest of the South American countries, but on a smaller scale. In the past United States prices have been from 25 to 35 per cent

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[1] There are six or seven important firms in Buenos Aires fabricating from semi-finished plastics, as well as numerous smaller firms with a more restricted output. Most of them are small, however, when compared to American firms. They are all nominally Argentine, although the principal producer of finished articles and a fountain pen factory are controlled by American capital.

[2] U. S. Dept of Commerce. Walstrom, J. D. *South American Trade in Organic Plastics. Argentina.* No. 1, March 1940, p. 1.

[3] U. S. Dept. of Commerce. Walstrom, *South American Trade in Organic Plastics, op. cit.*, p. 4.

higher than those quoted by foreign competitors in the South American markets. Naturally, with such a price differential the United States' export trade did not amount to much. Now, however, there is an opportunity to establish a flourishing one. Local sales agents should be established and scientific and technical knowledge should be furnished customers.

Recent developments here in the United States which are likely to provide important markets for the plastic industry are the experiments using plastics in automobiles and airplanes. Several months ago the Ford Motor Company put on exhibition an all-plastic-body car. At about the same time the first all-plastic plywood plane was produced. Along with these two important events plastics have entered the construction industry in the form of binders for prefabricated houses and in various decorative and structural applications.

Forbert A. Boyer, head of Ford's plastic research, had predicted before the outbreak of war that the year 1943 would see the first production of plastic body cars. The first cars to be produced would be small and low prices; probably costing between $350 and $400. The introduction of a small low-priced auto of plastic would afford opportunity for trial before mass substitution of the plastic body for the present steel one.

The automobile placed on exhibition had an all-plastic-body mounted on a tubular steel frame. Because of the high production costs and difficulties, the proposed low priced cars were not to have used plastics throughout. They were to have side panels of pressed fiber and resin with "Lucite" or "Plexiglas" tops and windshields.

The proposal of the Ford Company to use plastics in the body of their cars is no ersatz substitution. Although displacement of the conventional steel frame and body is still a long way off, it is likely to be realized eventually. The problem was worked on in Germany, but full scale commercial production was never undertaken. Cars with molded phenolic fenders, rear decks, and body panels were produced there; but the Ford proposal is more radical. Their plan is to design the car from the ground up to style for plastics. The use of a tubular steel frame would take all the strain.

When Ford puts out a plastic car, a radical change in production methods and structural design will be used. The Parallel I-beam frame, which is the foundation upon which most cars have been built, will be discarded. Tubular-longitudinal supports will be employed overhead and underneath. The 30 per cent weight reduction over standard models will enable the use of a smaller motor and lighter running gears. The car would, therefore, be quieter, better insulated against heat and cold, cheaper to operate, and more impressive in design.

New army raincoat in which rubber is replaced by Monsanto's Saflex, tough resilient plastic developed originally for safety glass. About 1¾ pounds of crude rubber per coat are saved by use of the plastic.

To produce the body of the car phenolic resin would be added to wood fibers in the pulp state. Other types of fiber such as flax or hemp may be used to provide strength as needed. Improvements in molding technique allow molding with pressures, in some cases, of only fifty pounds per square inch. This produces a material of less density than usual, but good rigidity and strength characteristics are retained. In order to offset the greater time of plastic molding cycles as against the time of stamping metal shapes, a tier arrangement of molds is possible. By placing several molds in one press, one above the other, an operator's production would be increased proportionately.

The radical changes in automobile construction and production described above would be slow in normal times. The present war, however, provides an excellent opportunity for the transformation when the industry changes from its war production program back to that of passenger cars. Plastic raw materials may cost a little more, but a considerable saving could be made as a result of fewer fabricating and finishing operations. For example, the relatively simple rear compartment door when made of steel requires no less than seven stamping operations, while only two are required for the same made of plastic.

The production of plastic automobile bodies would provide an outlet for surplus agricultural products. Robert A. Bayer estimated that the Ford Company alone would require 100,000 bales of cotton, 500,000 bushels of wheat, 700,000 bushels of soybeans, and 500,000 bushels of corn per year. Since plastics can be made from many farm products it might prove a solution to numerous agricultural problems. It might even provide an outlet for the South's cotton or sugar cane surplus.

Recently a new plastic came out of Louisiana's sugar cane fields, which are exploited to only half of their capacity by a ruling of the U. S. Department of Agriculture. It is made from bagasse, the fiber left after heavy steel rollers have pressed out the juice from the cane. If this new plastic, called "Kanex," fulfills its promise it may give Louisiana a new industry in the heart of the badly battered "Sugar Belt."

Sugar cane must go to the mill and the bagasse either used, destroyed, or shipped away. All the costs of transporting and disposal of the bagasse is charged against the sugar. The mill sites are natural locations for plastic factories which could be run as profitable by-product operations. Welded strips of "Kanex" can be machined like a block of steel and its uses vary from gears to automobile bodies and airplane fuselages.

That plastics have had a profound effect upon many industries is clearly shown by the present emergency. It has shown them to be essential in many lines of manufacturing. Of particular importance to the present war requirements are the characteristics of plastics which include their quick availability, their versatility in new applications, ease and speed of fabrication, and the fact that they are independent of foreign sources of raw materials. Plastics run invisibly through the interiors of planes, tanks, battleships, and the whole reach of military ordnance. They are essential parts of ignition systems, communications, and aeroplanes. At the same time they serve as ersatz substances in many fields of civilian use.

Used in Bomber

The giant bomber B-19 recently completed illustrates the extent to which plastics are used in military aircraft. The control devises are of molded acetate. Navigation instruments are housed in compression molded thermosetting cases. Control cables are held in place by pulleys, cable tracks, and fair leads made of phenolic laminated materials. All of the combat stations as well as the bridge and cockpits are enclosed in transparent plastic housings.[4]

A development of great significance to our war effort and to the future of plastics is the present experimentation with plywood planes. The President's plan to build 125,000 airplanes as rapidly as possible cannot be done with the supply of aluminum now in sight. To cut down on the consumption of aluminum per plane, aeronautical engineers are turning to plywood, which is a sandwich of plastic wood.

Plywood parts from pilot's seats to bomb-bay doors are in use in many of the U. S. bombers. Plywood trainers are already in production. These trainers and parts will help to remedy the aluminum shortage; but, as yet, no production of combat ships is under way. The reason for this is the lack of experience and understanding of plywood as an aircraft material.

Early plane construction was of wood and fabric or plywood. The plywood was bonded with casein or other glues. This type of construction was dropped in 1930 when a new method, monocoque, was introduced. Monocoque means that the ship's "skin," like an eggshell, is a supporting member. This meant all-metal construction and was adopted rapidly by most large producers. It solved the difficult problem under the old method of not having a waterproof or fungusproof glue.

The discovery of synthetic resins which are waterproof, fungusproof, heat and cold resistant, and amazingly strong has furnished the solution to the glue difficulties. There are other objections to plywood plane construction, but they have been met by the new "Vidal process" developed by Sherman Fairchild. Today Duramold Aircraft Corporation, a subsidiary of Fairchild Engine and Airplane Corporation, shares manufacturing rights with the Haskelite Manufacturing Corporation and the Hughes Tool Company.[5]

The Vidal process uses a tank, rubber bag, a mold, and steam pressure of fifty pounds per square inch.[6] It has licked the aeronautical problem of compound curves and it may eventually bring true the engineering dream of a fully monocoque construction. Today's metal planes are only semi-monocoque as they have a network of metal stiffeners and braces within them. A true monocoque wing would be hollow.

Plywood has certain characteristics that would allow its use in combat planes. It does not fail under continued vibration as readily as duralumin. It does not splinter in a crash, corrode on contact with salt water, or "flower" when hit by a bullet.[7] Plywood can be repaired easily with glue and a plywood patch. Even more important, it cuts down on "aerodynamic drag" and would enable the production of faster pursuit ships.

Will Speed Production

If plywood plane construction is developed quickly enough, production of planes may be speeded up and the present aluminum shortage alleviated. Plywood planes could be put on a real mass production basis. It is estimated that the time necessary to produce an all-metal plane could be halved. by plywood construction. Labor, materials, and machinery are no issue. Workers for the molding operations are easily trained and most of them could be women. In many of the operations where flat plywood is used the parts could be subcontracted to ordinary furniture and wood-working factories. Ordinary wood-working machines could be used and the raw materials, synthetic resins, are available. Why then are plane manufacturers not starting production of plywood planes?

The answer is an obvious one. All the present factories producing combat planes are tooled for metal. All their engineers are trained in the science of metals and they have very little knowledge of wood construction. Furthermore, data on the stress reaction of plywood is not very complete and until it is combat ships cannot be produced.[8] The United States Government, however, is spending large sums of money investigating and encouraging research on plywood. If it is successful, construction of plywood combat ships will be started in a hurry.

Plastic-bonded molded plywood is sure to profit from the war. Today it is only a fledgling industry, but by the time the war ends it will have made a place for itself as a basic material for plane and other construction purposes. The highest promise for plywood's postwar future seems to lie in the field of private plane construction. Here it will have to compete with aluminum, which is sure to be cheaper than it has been; but plywood has an even chance of winning the struggle. Unless some new method of fabricating is discovered, the simplicity and speed of plywood molding will give plywood planes a price edge. Several small companies in the private plane field have already begun construction.

Plastics have recently begun to play a part in another important industry outside of the automobile and airplane fields; namely, house construction and decorating. Plywood prefabricated houses are being used extensively for putting up defense housing communities. Many stores, office reception rooms, and modern homes are using plastics for decorative and utilitarian purposes. Such uses vary from wall paneling to furniture and lighting fixtures. In short, plastics have invaded many new fields in recent years. The picture changes and widens so rapidly that it is almost imposible to keep up with the progress.

Conclusion

Some of the men who have worked with plastics and watched their amazing development have turned into ardent prophets. They predict that the United States is about to enter a new industrial age—the "Plastic Age." Such enthusiasm has led to their exaggeration of the facts, nevertheless, there is some foundation for optimism.

In recent months there have arisen several new applications that promise to consume large quantities of materials when the War is over. The automotive, aircraft, and house-decoration industries will probably demand huge quantities of plastics, and there are a myriad of pres-

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[4] "B-19—Air Fleet Leviathan," *Modern Plastics*, Vol. 18. No. 12, August 1941, pp. 29-31, 94.

[5] "Plywood Flies and Fights," *Fortune*, Vol. XXV, No. 3, March 1942, p. 146.

[6] Cf. *supra*, pp. 16, 17.

[7] The term "flower" means to splay out. A bullet passing through duralumin splays out in jagged edges. A bullet passing through plywood leaves a clean hole no bigger than the projectile itself.

[8] "Plywood Flies and Fights," *op. cit.* p. 15.

ent and future utilizations that will help expand the industry beyond its present size. However, to fulfill the prognostication of a "Golden Age" for plastics, the industry would have to double itself many times. At present it cannot be put on the same footing as such basic industries as steel, oil, coal, or lumber.

The future of plastics depends on a great price decline. At present many new plastics are expensive and available only in limited quantities, and some of the older plastics are still too expensive to compete with natural substances in many applications. The war should provide a key to future reduction of prices and increases of volume.

Many of the basic raw materials used in the manufacture of plastics are also necessary to the production of explosives. The First World War enlarged the facilities for producing such chemicals enormously. The expansion that occurred during wartime paved the way for sources of plastic raw materials that were both plentiful and cheap. The War can be said to be the start of the remarkable growth of the chemical and, in particular, the plastics industries. There is every reason to believe that the present war will have the same type of effect upon the latter.

At present, facilities for expanding production of phenol, methanol, and other basic chemicals are being constructed as rapidly as possible. Research on plastics is being intensified in an effort to find new uses, applicable to our war needs. Such expansion and research is bound to lead to only one situation in the post-war years. Many new uses for plastics will be available and most of the raw materials for plastics production will be more plentiful and considerably cheaper than at present.

Many of the plastics that are new now will be automatically reduced in price in the post-war years. At present they are available in limited supply, carrying a burden of new plant investment and development costs. These costs will eventually come down as will costs arising from many of the current high patent royalties. A small reduction in thermoplastic prices would have a double-barrelled effect. It would widen the scope of the injection molder and, at the same time, mean added savings in cost per unit of output.

Plastics will unquestionably be much cheaper after this war, and the industry is certain to continue its expansion as prices fall, but to enter into a "Plastic Age" means the displacement by plastics of many natural substances, particularly, metals, in many lines. Such substitution is limited by a stern set of economic factors.

When a plastic is substituted for some other material, it is always for one of three reasons: (1) it possesses physical properties making it indispensable; (2) it may be cheaper than what it displaces; or (3) it may have some desirable qualities such as color, lightness, finish, or non-conductivity of electricity that makes it preferable even at fractionally higher cost.[9] Plastics are not substituted, (1) when they cost more, without enough advantage over traditional material; (2) when they have mechanical limitations; or (3) if the manufacturer of plastics is located too far from the ultimate consumer, which prevents promotion and sales. No industrial revolution is going to take place on color or physical properties alone. The most important factor mentioned above is that of cost.

Most of the future of plastics is bound up in the set of economic relationships that exists between plastics and metals. For example, the following approximate prices give a comparison on a cost basis.

Table 13[10]

Material	*Price (per pound)*
Phenolics	14c.
Thermoplastics	higher than phenolics
Steel	1.5c.
Brass	13c.
Aluminum	18c.
Plate glass	15c.

These prices will not prevail in the future, of course, but they tend to show the relationship of plastics to some of their natural competitors. Although plastic prices will decline, so probably will those of metals, especially aluminum. However, there are some relieving factors. Plastics are lighter, and, therefore, it does not take a pound of plastic to replace a pound of glass. Furthermore, they will do many jobs other materials cannot do; they are easier, and more efficient to manufacture than objects in metal and wood.

The future of the plastics industry seems to be a course halfway between the prediction of the prophets and the present status of the industry. The years following this war should see a continued expansion in the volume and diversity of plastics used. Mass production of the plastic auto, airplane, or house is still far from a reality; but it may well be eventually. Such applications will raise the industry to a position of prime industrial importance. The plastics industry may well come to occupy a position equal in size and importance to that now held by our principal manufacturing industries.

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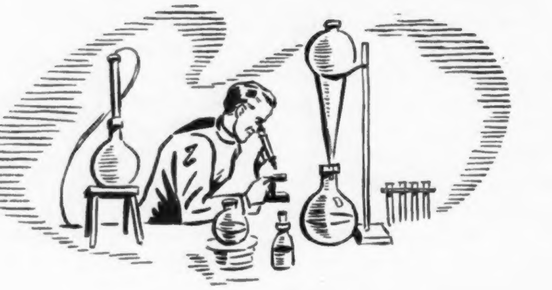
[9] The fractionally higher cost cannot be beyond a certain differential.

[10] "Plastics in 1940," *op. cit.*, p. 108.

Bathing suit made of Vinyon, textile fiber produced by American Viscose Corp. from natural gas (or coal), salt, water and air.



THE LABORATORY NOTEBOOK

New Viscosimeter Measures Viscosity Quickly and Accurately

By **E. A. Zahn, Works Laboratory, General Electric Company**

WITH unskilled laborers taking their places in the ranks of war workers in ever-increasing numbers, added importance is being placed on the use of time-saving devices to help them produce war products quickly and continuously. A device that can easily be used by any workman is the General Electric viscosimeter (*Editor's Note: In the trade this viscosimeter has come to be known as the Zahn Viscosimeter*), which is designed to give a check reading of the viscosity of paint in 20 seconds.

A constant and correct viscosity of paint at the point of application is essential for uniform production, and since the viscosity changes for various reasons, such as from a change in temperature or the use of different solvents, frequent checks are necessary. Previously, viscosity determinations were a large order, and required expensive equipment as well as excessive time by a trained laboratory technician. This tended to discourage frequent checks.

In some cases, paints were prepared for application by measuring the volume of both the diluent and unmixed paint, or by the use of a hydrometer, which gives a reading relative to material weights in relation to water. Although either of these methods is better than mixing by guess or memory, the readings are far from accurate. Records have shown, however, that the G-E viscosimeter not only saves many man-hours but also induces more frequent checks because of the simplicity of the device.

The G-E viscosimeter consists of a bullet-shaped steel cup with a small orifice in the bottom. It is suspended. by a twelve-inch looped handle, in the paint to be tested. Error due to differences between the temperature of the paint and that of the instrument is eliminated by leaving the viscosimeter in the paint between readings.

When a reading is to be taken, the cup is lifted out of the paint and a timer is started. The timer is stopped when the stream flowing through the orifice in the cup suddenly breaks, the time of flow giving an accurate indication of viscosity. Currently used, the viscosimeter will give consistent readings at any temperature.

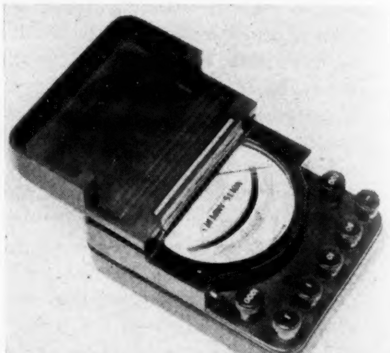
At the present time, nearly all paint materials used in the production of war materials are new-comers to the industrial field. It is the job of the paint manufacturer, therefore, to prescribe factory handling details for consistent results. The viscosimeter serves a valuable purpose in this respect, as a paint manufacturer can often specify handling in terms of viscosity and thereby save both time and money for himself and the customer.

The use of the G-E viscosimeter is not confined to paint materials. It has been found to be useful for measuring viscosities of nearly all other liquids, including lubricating oils. The device is available in five standard sizes, for use with thin mixtures, ordinary mixed paints, heavy mixed paints, and extremely heavy mixtures.

Portable A-C and D-C Units

New P-14 portable a-c and d-c instruments for general field service use where an inexpensive unit is required, are announced by the Westinghouse Electric and Manufacturing Company.

Modern design, accuracy, sturdiness and reliability are the outstanding features of these new units. The molded cases are fully insulated and magnetically shielded from stray field influence. These instruments are available either with or without covers. The scale length is 3.2 inches a-c and 2.8 inches d-c and the units have an accuracy of + or — 1 per cent of full scale. The instruments are equipped with a mirrored dial and a knife-edge pointer which aids in making close and accurate readings.



The P-14 embodies a variety of single, and multi-ranges providing for the measurement of a-c volts, amperes and milliamperes; d-c volts, amperes, milliamperes, and micro-amperes. Ranges and combinations of ranges have been carefully chosen to meet every need of test men, laboratory technicians and research engineers. Combinations such as four current and three voltage ranges make this the most complete and flexible instrument available in this classification, according to the manufacturer.

Midget Lamp

While this lamp was designed by W. A. Taylor & Co. for use with single Taylor Slide Comparators when determinations must be made at night or in dark places, it has been found to be ideal for all routine testing even in daylight, according to the company.

The Comparator base sits on the shelf at an angle of 45° so that, in making readings, one can look directly into the slots in the slide and base. This eliminates handling the outfit, with possible chance of breakage, as only the sample tubes need be handled. Also, in many laboratories and plants it is almost impossible to obtain a clear daylight background because of walls, trees, etc. The lamp gives uniform daylight conditions at all times. It is fitted with a Dalite glass, special bulb, cord and switch and operates on any 110 V circuit. It can be used with any Taylor pH-Chlorine or Phosphate Comparator.

NEW PRODUCTS AND PROCESSES

By James M. Crowe

UREA is now being widely used to inhibit splitting and checking of lumber during the necessary seasoning or drying process, and also to treat wood so that it may be bent and shaped for certain specific war uses, according to chemists of the Du Pont Co.

The Navy is using thousands upon thousands of feet of treated lumber for decks, ribs, frames, and other structural parts of ships. Auxiliary stocks of treated lumber are being carried on board Navy vessels for emergency repairs of the ships themselves and for building and repairing docks, landings, and other facilities.

The Army is purchasing treated lumber in clear and structural grades for such uses as stringers, planks, and rails on army pontoons used for bridges. Du Pont chemists advise that without this chemical seasoning it would have been almost impossible for the lumber industry to supply the Government with all the lumber requested for army pontoons. Some mills that tried to dry this material without urea experienced seasoning degrades of 40 to 60 per cent of the stock dried, and in addition tied up their dry kilns for an unreasonably long time. These seasoning difficulties were largely solved by the use of urea, and kiln degrade of this important farm-grown crop of lumber was reduced to around 3 per cent.

While experiments with urea for chemical seasoning of wood have been conducted by several public and private agencies throughout the country for several years, with resulting widespread commercial application of the findings, additional research to perfect and expand present procedures is being conducted and planned.

Many new applications of the process are being developed almost daily. For instance, consideration is being given by large contractors to possible use of urea-treated lumber in the construction of war plants throughout the country. Only recently word was received that, to obtain specific information aimed to shorten the time required to season hardwood lumber, the Forest Products Research Laboratory of the Texas Forest Service, in cooperation with the East Texas Lumber industry, is treating green white oak, red oak, and sap gum lumber with urea. The wood will be subjected to controlled drying conditions in modern dry kilns. East Texas lumbermen expect the experiment will produce valuable information for local application within six months. The U. S. Forest Products Laboratory and the West Coast Lumbermen's Association are among the pioneers in the development of chemical seasoning, and are continuing research with special emphasis on war-industry needs.

Urea has numerous other uses, such as urea formaldehyde resins, adhesives, and textile treatment. Its chief agricultural use in normal times, is to supply leaching-resistant nitrogen in commercial mixed fertilizers, essential for the growing of large yields of various farm crops needed to feed, clothe, and supply the people and armies of the United Nations. It has outstanding medical values of special interest to physicians and veterinarians. In addition, experiments show that urea supplies protein feed for cattle, sheep, and other ruminants, but the commercial utilization of urea for this purpose must await the end of the war. Urea also has tremendous possibilities for such agricultural uses as control of weeds in tobacco seed beds; control of namatodes in horse barns; and the making of compost for mushroom growing.

New Type Glass

Production of a new type opaque glass, composed of myriad tiny cells, that floats like cork and can be sawed or drilled with ordinary tools has been started by the Pittsburgh Corning Co. The product, known as foamglas, weighs only ten pounds for each cubic foot—one-fifteenth the weight of ordinary glass. It is odorless, fireproof and vermin proof and possesses insulating qualities, the company said.

Its cellular structure gives the glass its buoyancy and insulating properties. It will not absorb water and it will remain afloat indefinitely.

It is produced by firing ordinary glass which has been mixed with a small quantity of pure carbon. At proper temperature the glass softens and the carbon turns into a gas which then acts upon the molten glass in much the same manner as baking or yeast in baking bread. Through exercise of controls, a rigid vitreous slab, in which cells are uniformly small and entirely sealed one from another, is obtained.

Brass Cleaner

Brass fabricators have discovered a new and easier way to produce the well-known shine for which these articles are noted.

Ferric sulfate, has been found to do an exceptionally good job of removing ugly black smut and red cuprous oxide scale from the surface of the brass, according to Monsanto Chemical Company, which developed the process for commercial production of this chemical.

The stain and scale are formed by the annealing operation which removes internal strains set up by the stamping and forming of the cold metal. It is necessary that the stain and scale be completely removed in order to get a flawless, mirror-like surface when the brass is burnished.

The advantage of ferric sulfate over other chemicals previously used for this purpose is that it removes the stains more quickly and with less loss of metal, thus better preserving the design on the button as well as conserving metal.

Ferric sulfate is used for the same purpose in the manufacture of brass cartridge cases. Since the making of a cartridge case consists of a series of drawing and annealing operations, it is essential that all scale and stain be removed before each draw or there is likelihood of fouling or breakage of the drawing dies.

General Purpose Plastic

Durez 11540, a general-purpose phenolic molding compound, is said by Durez Plastics & Chemicals, Inc., to have been made adaptable to many new uses through a minor revision in its formulation. It has already been adopted for several war production parts requiring military approval. Durez 11540 has slightly higher impact strength and greater water resistance than former top-grade general-purpose materials. It is said to deliver excellent surface finish. Field communication equipment which must withstand hard usage, as well as instrument cases, housings, and parts are now being molded of this material.

New Cellulose Product

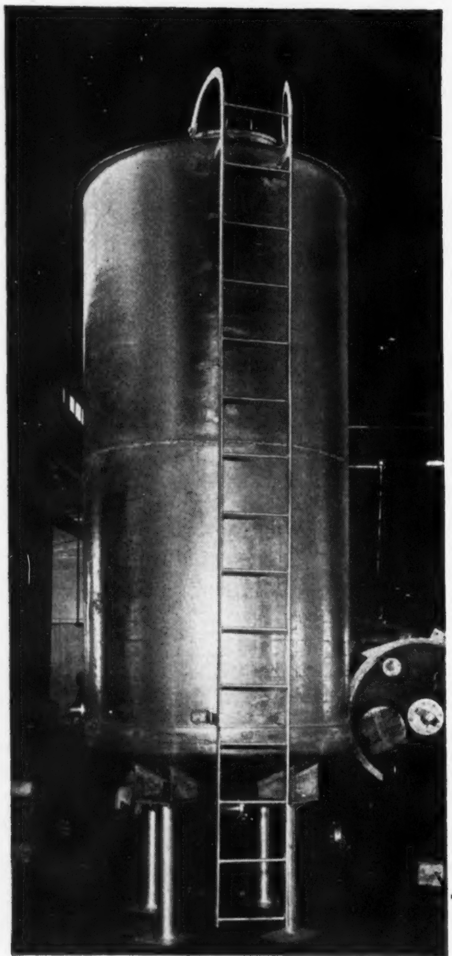
The importance of substitutes in filling gaps caused by diversion of vital war materials is reflected in the interest caused by the introduction of Onco "V". a new cellulose product developed by Brown Company.

The cellulose base for Onco "V" was originally discovered during research experiments on filter materials for gas masks. First commercial use of Onco "V" was as an insole fabric to replace latex-impregnated materials commonly used before the rubber restrictions.

After the introduction of Onco "V" to the shoe industry Brown Company's Onco Division received many inquiries from manufacturers of a wide variety of products that are feeling the pinch of priorities. Among them were manufacturers of luggage and linoleum, gaskets and leather goods, who believe that they may have a substitute for leather and cork in this cellulose fabric derived from gas mask research.

Designed for a War Industry

BY PATTERSON-KELLEY



This aluminum stearic acid remelt tank is a product of Patterson-Kelley's years of practical experience in engineering durable, efficient industrial equipment. From blue print to installation of the completed tank, Patterson-Kelley engineers and designers, mechanics and inspectors make it their business to see that the finished product meets performance specifications to the letter.

That's the kind of teamwork that has become familiar practice in Patterson-Kelley's East Stroudsburg plant. Through the years, it has resulted in re-orders of Patterson-Kelley autoclaves, kettles, cookers, separators, stills, tanks and heat exchange equipment from many of America's largest industries. These units may be fabricated in a variety of metals and alloys to meet the most exacting requirements of your operating conditions.

Patterson-Kelley's enviable reputation for dependability and quality workmanship invites *your* confidence. If you have an equipment problem, why not consult our engineers — at no cost to you? Write today for your free copy of the Patterson-Kelley Chemical and Process Equipment Catalog.

66" in diameter and 152" high, this Patterson-Kelley Vertical Storage Tank is constructed of 1/2" aluminum plate. It contains 66' of 1 1/2" aluminum I.P.S. tubing. Fill chute measures 14" x 20". The ladder is of steel.

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MANUFACTURERS FOR THE CHEMICAL AND PROCESS INDUSTRIES

PLANT OPERATION AND MANAGEMENT

In 20 below 0° temperature made to order, a hooded engineer conducts a cold room test on Westinghouse's largest type of power line disconnect switch. It is one of 10 supplying a large chemical plant in the West. Built for high tension power line, switches are built to operate at 230,000 volts and 1,200 amperes.

Digest of New Methods and Equipment for Chemical Makers

ENGINEERING MANAGEMENT OF CHEMICAL

By Dr. Robert Lobstein

Here is a discussion worthy of note on engineering management of chemical plants. It deals, on the whole, with large and medium-sized plants. From top to bottom, the author covers his subject thoroughly and also includes several charts of his own.

IN speaking of engineering management of chemical plants, this discussion will be confined to a review of the operations in large and medium-sized plants; the method to be employed in small concerns, while following the same plans will, of necessity, be on a different scale.

The technical management must be so arranged that it will afford a basis for the foremen, the accounting department, and the executives of the company to gather the necessary information from all reports submitted, so as to have a clear picture of the profits of the entire business, as well as for each plant and each product. To have such a clear picture at all times presupposes that the daily reports will show the cost of current repairs, extraordinary maintenance, and new construction projects. The foregoing is sufficient to show that technical management therefore has a varied task. The size of the establishment will determine the degree of accuracy necessary, and it should be borne in mind that hair-splitting may be the source of mistakes and inaccuracies, rather than the cause of improvement.

Every large chemical plant has various departments, and as such we classify the operating or production departments, and also the following divisions: maintenance, storage, construction, power house, etc. Each one of these departments is a unit complete in itself, but they are likewise all interdependent and must work together. If two or more of these departments work together, and the end product or the intermediate product of the one becomes the raw material for another, the department supplying such raw material is nevertheless to be regarded as a complete production unit, and its product is to be charged to the receiving department at a fair cost, as determined by the executives.

Integrity must be the foundation of all supporting data furnished for the purposes of cost accounting and the determination of operating efficiency. If a mistake is made, and even though the matter appears to be of minor importance at the time, it should not be entered into other records, and thus throw all the data derived out of balance; it is far better to admit at once that a mistake has been made. In submitting data, the industrial engineer must always be aware of the fact that if he makes a mistake, or attempts to present any operating detail in a more favorable light than that to which it is honestly entitled, he will only cause trouble for himself in the future, since all data which he submits will be minutely checked, compared with those submitted by other comparable departments or plants, and any inaccuracies, mistakes or unexplained discrepancies soon brought to light.

We will now consider a few common practices; those not touched upon immediately in the following will be considered as they arise in our discussion.

In the course of the current year, a record is made of all major repairs and new installations contemplated for the following year, and this proposed work is summarized in a "Forecast for the Year . . . . ." Each department will prepare its own summary, and carefully calculate all costs. The forecast should be completed by August of the current year and then submitted to the Board of Directors for approval. It is important that this approval be given promptly, so that work may be started as early in the new year as is feasible. When this is not possible, and the start of work is delayed, difficulties in cost accounting will usually arise at the end of the year. However, regardless of the status of the work, when the accounts are closed at the end of the year they will give the figures only for such part of the work as has actually been completed. It is not possible to continue an unfinished project from year to year, unless such a project again appears in the forecast for the following year. It is important that the estimates appearing in the forecast shall be made as accurate as possible, in order to avoid a disproportionately large excess or deficit. Accordingly, it will be necessary in most instances to secure bids at the time the forecast is made. Such bids will either be

PLANTS

secured from the company's own engineering or maintenance division, or from outside contractors, as the case warrants.

The forecast will usually consist of (a) new construction and (b) extraordinary repairs. If a new piece of equipment, or a new group of apparatus is being installed, then this will clearly be classed as new construction. Similarly, if changes in equipment or repairs are effected, which do not fall in the line of ordinary maintenance, they will obviously be classed as extraordinary repairs. However, there will be numerous instances when the dividing line will not be as clear, and the classification of such borderline cases may present some problems. Other factors, rather than, or in addition to purely technical considerations, may play a part in deciding the classification. The management of the company will have to decide in each case. The important thing is that once the work has been properly authorized, it should not be delayed, except for valid reasons.

The workmen in a department will be divided into different groups, corresponding to the types of work as laid down by the engineering department. First, there will be the process operators, whose sole job is to turn out whatever product the particular department makes. The second group necessary in any larger plant is the maintenance group, whose job it is to attend to all necessary cleaning and the ordinary recurrent repair work. Those repair or maintenance jobs which do not fall in this category will be executed by the maintenance department. Still more extraordinary repairs will necessitate calling in an outside maintenance crew. Naturally, all auxiliary departments, such as the maintenance division, or the workshop, the boiler house, etc., will have only three categories of workers: their own operators, operators from other departments and outside employees.

The Chemical Department

When entering a chemical department, we are confronted by the different pieces of equipment. We notice pumps, pipes, fittings, drives—all connected with the apparatus and used to carry out chemical processes. For example, let us stop at a centrifuge. We see the drive, the feed, the discharge pipes, the motor, the transmission. It is only when the maintenance of all these parts is considered as a whole that we can have any conception as to the profitableness of the centrifuge. In order to be able to single out any piece of equipment, with all the essential auxiliary apparatus, and identify it, it will be necessary to distinguish it in some way, hence we shall give it a number. So far as the drive is concerned, we shall have to distinguish between direct drive and transmission. In the first instance, all parts of the drive (motor, belt, pulleys) will be regarded as part of the centrifuge. If we are dealing with a transmission, only the belt and pulleys of the centrifuge will bear the same number as the centrifuge itself. If the base number be A 1-35, there can then be sub-divisions of this—(A 1-35 a, b, c, etc.), to denote auxiliary equipment. In some plants, all the motors are listed in a separate register. Each motor is so designated as to permit the immediate ascertaining of its purpose and the apparatus or drive belonging to it. This system will also give a very clear picture.

In continuing our visual observations, we note that the feed line to a pump is regarded as belonging to the pump, but the discharge pipe line or the pressure line belongs to the apparatus to which it leads. This, of course, is the conventional division. What matters is that the whole plant should abide by one system of classification and that no variations be allowed.

We will now imagine ourselves standing in front of an evaporator station. We notice a quadruple-effect evaporator, with four bodies. These four parts, with the steam pipes, liquid pipes, condenser, condenser water pipes, pumps, preheaters, etc.—together form one unit. The last pipe line for the thick liquid does not belong to this unit; it belongs to the next piece of apparatus of the following operation.

This four-part unit will not allow the technical personnel a synoptical view of the whole. We must therefore have sub-divisions, and the sub-divisions must be carried far enough to allow control over the maintenance and profitableness of each of the parts.

The series of numbers mentioned above will form the basis for information for the technical management. All cost accounting and estimating work will depend on its basic accuracy.

Let us assume that one of the four evaporators must be shut down. Let us assume, further, that the maintenance department is working on the heat-pipes, pipe-line and fittings. However, the same job requires that a wooden platform be built by workers from another department, while a cover has to be welded by outside help. Just how does this work proceed?

The foreman of the chemical department will write a work order to the maintenance department, stating what work is wanted, the number of the main piece of equipment and numbers of any auxiliary equipment to be included in the repair work. The work order is then presented to the superintendent or manager of the chemical department for approval. After it has been carefully checked and approved, it is sent to the maintenance department. Should any changes be desired, they will again require approval of the superintendent before proceeding.

When the work order reaches the maintenance department it is recorded and divided. It is possible that one or another item in the work order may require the services of a man from another department, for instance, the platform mentioned above, for which a carpenter will be necessary. In such instances, the foreman of the maintenance shop will write the necessary work orders to other departments. Of course, it would also be possible to have the foreman of the chemical department write all the work orders necessary for the completion of the job. However, it is believed to be more expedient and efficient to have the maintenance shop do this, since they are naturally in a better position to know what is wanted, and while the superintendent of the chemical department may be equally well qualified in this respect, it is not imperative that he have this experience. The important thing is that any divisions of a work order carried out by the maintenance department shall carry the same classification number.

If any materials from the storekeeper are needed for this work, a stores order will be made for this by the foreman of the maintenance department. This, likewise, must carry the same identifying number. This would also apply if the

operating department had to draw such materials direct.

We have now attempted to follow through a repair job carried out by the maintenance department. There are also two other possibilities: the first, that the repairs might be effected by the regular skilled mechanics in the chemical department, the second, that the repairs might be made by outside labor. No work order will be necessary in the former case. While it is possible to assume that all repairs, no matter how small, are to be carried out by the maintenance department, most chemical departments find it expedient to have skilled mechanics available at all hours of the day or night, for safety reasons among others, and therefore it is customary to have one or more skilled mechanics as regular employees of the chemical department. They have nothing to do with the chemical process, but are employed only for the purpose of carrying out maintenance and repair work.

The foreman of the chemical department must keep track of the labor hours of his regular skilled mechanics, and must record the time worked by them on each piece of equipment. In most cases, experience has shown that calculation by half-hours is close enough. The labor hours worked by the regular skilled mechanics of the chemical department are naturally also a part of the maintenance costs, and the time sheet will show the number of units (half-hours) worked by each mechanic on each piece of equipment, the latter being denoted, as already mentioned previously, by a classification number.

For the pay roll, all hours worked by all employees of the plant will have to be recorded, and the usual division made between skilled and common labor, but this is not the subject of our present discussion.

We now come briefly to repair work requiring outside labor. There may be large jobs which cannot be carried out by either the skilled mechanics of the chemical department, or by the maintenance department. When outside labor thus needs to be called upon, this will be done by the maintenance department, at the request of the chemical department.

The time sheet of the work performed must be made up by the foreman of the maintenance department, but this does not mean that the foreman of the chemical department does not need to superintend the carrying out of the work.

Service Department

The larger a chemical plant, the more necessary it is to have a certain number of skilled mechanics. Their number will depend on the size of the plant. They may be machinists, blacksmiths, electricians, welders, carpenters, scaffolding workers, etc., again depending on type and size of plant. It is a rather difficult task to decide just how large and inclusive a maintenance department should be. A word of caution should be said against making the department too large. After all, the workers in this department must be kept busy full time and the year around. One of the most important jobs of the maintenance workers will be the finishing of rough castings. These will be the spare parts for all of the different departments. There is also always a variety of other preparatory work to be done. However, if the maintenance division has been conceived on too large a scale, it may happen that the superintendent of this department will have to seek outside contracts to keep his machines and his men from being idle. The department would then become a machine shop, and could no longer be classed simply as the maintenance department. Of course, the likelihood of such a situation actually arising is excluded from this discussion, and the possibility is mentioned only as a warning against attempting to have a maintenance department on too large a scale.

We will now stop in at the maintenance department. A large number of work orders from all of the various departments have been received. They are checked immediately, sorted, and the different factors involved talked over, then the work is assigned to the respective mechanics. The time for starting each job is set, the materials necessary for the job are determined and procured, and each worker receives a time ticket, stating what work is to be done, the time started and estimate of the time the job will require. When the work is completed, the foreman will check the actual time taken for the job. The unit of time on the time ticket will again be the half-hour.

The pay roll is made up on the basis of the time tickets of the workers in the maintenance department. These tickets must show at a glance the number of hours put in on each job, and the total hours worked by each man in any one day or in any one week. It is important that all hours worked appear on the time ticket, as otherwise there is no way to account for them, and accordingly, they cannot be paid. Accuracy is very important in keeping the time sheet.

We have now spoken of work order, time tickets, stores orders, time sheets. All of these taken together will show the kind of work done, time consumed, and finally the cost. The latter item will be composed of labor costs and cost of materials.

We have already seen that it is necessary to draw on the stores for any materials for maintenance work as well as for some items for the chemical department. No materials can be given out by the stores except on the basis of a stores order. These stores orders must carry the number of the original work order or of the special work in the chemical department to identify the account to which they will have to be debited by the accounting department. In this way, control is also established over the inventories in the stores.

In order to estimate the cost of a particular repair job or the maintenance cost for a particular piece of equipment, the labor hours are multiplied by the hourly wages. Different wages prevail in each department. There will be different wages for common labor, for skilled mechanics, and for the skilled process operators. All fixed charges (social insurance of various types, etc.) must also be figured, to say nothing of the expenses accrued by the maintenance department itself for materials and labor hours required for its own upkeep, both in the nature of repairs and of new installations. Normally, these costs, which cannot be controlled by the technical management directly, are lumped together under general overhead and will receive consideration in determining the price of the product by means of this method of accounting. We shall see later on why this is done by this method.

About Bonuses

In regard to apportioning the salaries and bonuses of the supervisory personnel in determining cost, there are two schools of opinion. Some hold to the view that these items also should be charged to general overhead. There are others, however, and the writer is among them, who think that these charges rightly belong to the department concerned. It is believed that by calculating in this way one has a much better idea of what supervisory personnel is necessary for each department. In adopting this latter method, these costs therefore appear in some way on the time sheet, possibly best expressed as a percentage of the wage-hours. However, this must not be done in such a way as to lose track of the actual wages, disregarding the percentage for supervisory personnel.

If the above described distribution of charges is not made, the impression may be gained that the maintenance department works more cheaply than an outside machine shop. This will also explain, in addition, the earlier remark that if the maintenance department is conceived on too large a scale it may easily turn into a machine shop. Such a machine shop would naturally appear to be able to work more cheaply than an outside machine shop, which must charge for all overhead. It is therefore very important that in making comparisons of estimates of one's own maintenance department and

	Time sheet of the mechanical department																		Date		
Accn																					
# W	hr	hr	hr	hr	hr	hr	hr	hr	hr	hr	hr	hr	hr	hr	hr	hr	hr	hr	hr	hr	hr
501																					
502																					
503																					
etc.																					
Sum																					
Total sum																			Signature		

outside machine shops this be done very accurately.

The labor cost is usually determined by taking an average of all wages paid in the maintenance department and adding the fixed charges, so that with the exception of the share in the supervisory personnel, an average of all hourly wages is shown on the labor cost sheet.

Work done by the skilled mechanics of the chemical department will also have to appear as wages on the labor cost sheet, since it is also part of the maintenance cost; however, it will be the task of the accounting department specially to calculate and apportion these charges.

We have already mentioned that all materials needed either by the chemical department or by the maintenance department must be procured from the stores on a stores order. As differentiated from the stores, we have the storage for raw materials. The stores are usually directly responsible to the accounting department.

Stores Department

All materials necessary for operation must be requisitioned and a purchase order issued for them. They will include all raw materials, lubricants spare parts, all articles, the use of which in the process is recurrent, and such articles as are needed for extraordinary repairs and new construction. All raw materials will have to be ordered in cooperation with the accounting department, since the amounts involved are large and the industrial management does not exert any influence on their purchase, other than from a technical angle. The same applies to all articles, the consumption of which is continuous in the process. Ordering spare parts, and all articles and materials necessary for extraordinary repairs and new construction will, however, fall entirely within the province of technical management. There is little doubting the fact that the stores represent a borderline case, in which the cooperation of technical management and accounting department is necessary.

The stores department as such will incur expenses. These must be covered in some way. For this reason, all items passing through the channel of the stores department will be increased by an amount sufficient to cover all of these handling charges. The amount of this increase in price will be fixed by the accounting department, in cooperation with the technical management. These handling charges will be graded according to the value of the item in question. Even such equipment as cannot be housed because of its size, and which must therefore be stored in the open comes under the supervision of the stores department. The personnel actually employed in the stores department is responsible merely

Work Order	No.	
Chem. Dept.	Date	
Work, Acct. Nr.		
Kind of work		
Foreman	Tech. Control	Mech. Dept.

Time Ticket for the Worker

No. Name

Dat.	Kind of Work	from	to	hrs

Stores Order No.

Chem. Dept.		Dat.
For Acct. No.		
Objects:		
Chem.D.	Mech.D.	Magazin

Time Sheet – Chem. Dept. Process

Chem. Dept.
Station
No. Workers Hrs.
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Time Sheet Chem. Dept. Repairs

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for the commercial procedure, while from the technical angle, the technical personnel will naturally carry the responsibility. If the stores department is an exceptionally large one, a technical man may have to devote all of his time to this responsibility. Where the department is not large enough to warrant this, technical supervision is usually in the hands of the superintendent of the maintenance department, whose experience will best equip him for this supervisory work.

Rough castings, which have to be finished by the maintenance department before they are transferred to the stores department, will be charged with the increase in cost incurred by handling through the maintenance department, as well as by the corresponding increase in the stores department. Since the work done on these rough castings is not yet intended for any specific department, they will be tagged with the stores department label and will not be debited until requisitioned by some particular department.

It is very important that the stores department should keep proper records of all items received, since each one represents a certain sum of money and must therefore not be lost. That is also the reason for making the stores department accountable to the accounting department. After all, it is the accounting department which has the final responsibility for the finances of the whole plant, and from this angle even the engineering division must be subject to its control. If the engineers confine themselves to the proper control over all technical problems, they will be so well occupied as to have no desire to encroach on the responsibilities of the accounting department.

The stores department bookkeeping system is best accomplished by the use of a card system, so that changes and additions may be readily executed. All items received in the stores department are recorded in the perpetual inventory, and they do not appear with any technical classification until requisitioned, depending on the department for which they are intended. As soon as the article is requisitioned, the proper notation must appear on the cards, and these are then sent daily to the bookkeeping division of the stores department for proper entries.

Bookkeeping

We will confine our remarks, of course, to that part of the bookkeeping which is in some way connected with engineering management. Thus far, we have spoken of requisitions, work tickets, time cards and time sheets and the stores' card system, as affording bases for the bookkeeping.

A work card will be made up for any job started, and these cards should preferably be of different colors in order to differentiate at a glance the various departments in which such work is done. Such cards will also need to be made up for extraordinary repairs and new construction, and here again, they should be readily identifiable, the different departments having some external mark in common: different colored cards, cards with different colored edges, or diagonal stripes.

The account number of the job, clear designation of the apparatus on which the work is being carried out, and any subdivision of the job, etc., should be readily discernible. The front of the card will have columns for recording the time spent on the job, and each column will have space for the employee's work number or badge number, and the number of units of time worked. The time will be added up each day. The back of the card will record all materials used on the job, showing their normal value and including the sur-charge for handling either by the workshop or stores department, or both. When the job has been completed, the total hours shown on the front of the card are multiplied by the hourly rate (including any additional rates, etc.) and the sum arrived at is then transferred to the back of the card, so that the cost of labor and cost of materials can be added.

WORK CARD (front side)

Department			R	R.R.	R.P.					Acc.	
Apparatus											
Kind of work											
Started										Finished	
Date	No. of #	Name of worker	hrs	sum of hrs. p. day	total hrs.	date	# of W.	Name of worker	hrs	sum hrs. daily	total hrs.

WORK CARD (back side)

Date	Notation of the supply-objects	Quantity	price unit		total pr.		sum	
			$	¢	$	¢	$	¢
Sum of the costs of supply-objects								
Sum of the wages								
Total sum								
Signatures								

If these work cards are to fulfill their purpose, there must be accuracy and close cooperation between all concerned. They should be collected at a certain hour each day, the time to be determined by the bookkeeping department, and one hour before the close of the working day of the office of the technical department, all cards should be on the desks of each department head, to be checked. The bookkeeping department will then be in a position to make all necessary cost calculations for any given job, including its own share of the costs in accounting for the job.

It will be astonishing to see what an excellent foundation these cards make for the technical man, and how many instances there will be when the data on these cards can be used to advantage in making up estimates, etc. If mistakes or inaccuracies occur, it is very important that they are cleared up by close cooperation between the technical and the bookkeeping departments. It is important that neither department assume the responsibility for making any changes or corrections without prior consultation with the other, and that the technical men realize that in all matters affecting the accounting system, the bookkeeping or accounting department has the final word. It is equally true that the accounting department should not take it upon itself to make changes or corrections affecting technical matters, except with the express agreement of the technical department.

At the beginning of this discussion, we made a division of the whole of a large chemical works into departments. We shall now scrutinize this division on the basis of the foregoing, and it will be easy to see that we have operating departments (those which actually make the various chemicals sold as final or intermediate products), auxiliary departments (all those furnishing steam, power, light or other necessary factors to the operating departments), and finally the purely mechanical departments, which we can group together under the title of workshops. It is just as important for the accounting in the auxiliary departments to be as accurate as it is in the operating departments, since the costs of all departments together furnish the basis for fixing the price of the company's product or products.

Pricing

Of the factors which determine price, we shall again consider only those over which the technical man has any control. The engineer should be familiar with the other factors which determine price, in order to have a complete picture, but in our discussion, we need not concern ourselves with them. The price is usually set per pound, or for bulk commodities, per ton.

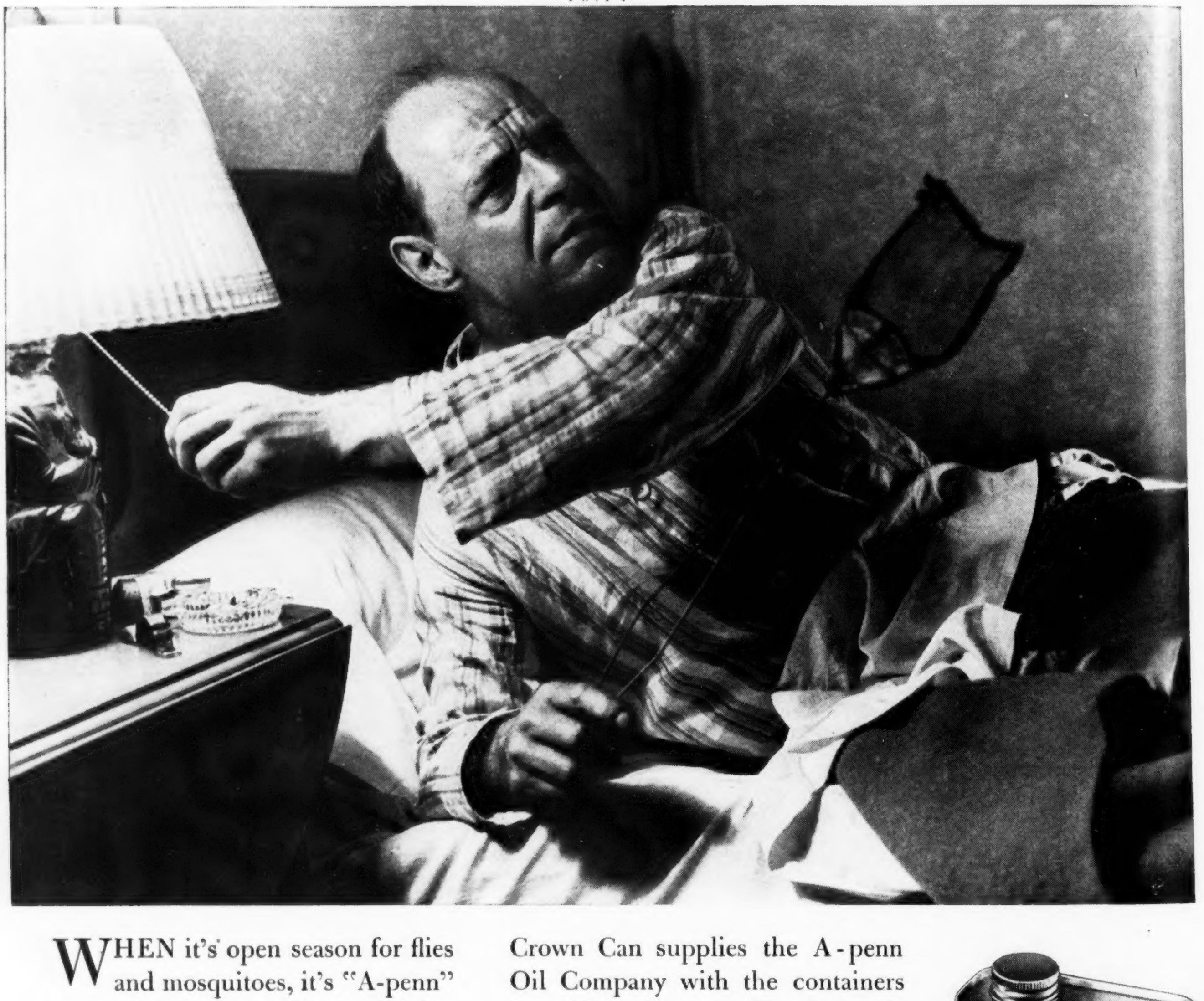
Consumption of raw materials is checked very carefully each month, and this control should be exercised by some other person than the operating superintendent himself. When total consumption of essential materials has been established, the information is converted per ton of finished product made (or per 100 lbs. etc.).

To find out how much steam has been consumed by each of a number of units receiving steam from the same boiler house, it is essential to have an adequate number of steam gauges. The same applies to any other commodities, the consumption of which is easily measured, such as power, light, etc. In the case of steam, pressure and temperature of the consumption is also important, of course, since all figures will have to be converted to boiler house steam figures, for the purpose of fixing the price of the finished products. Actually, to determine the steam consumption of a number of departments in a chemical plant accurately, is no small task; however, we need not be concerned with the details of this problem here.

When the materials cost has been established by the technical department, the accounting department will calculate the cost per unit of product, adding labor costs, cost of extraordinary repairs and new construction, etc. When all of these figures are available to the technical personnel, there will be no unpleasant surprises later, and such can easily occur if there has been inaccuracy or insufficient cooperation between the technical and the accounting departments.

When the cost of production per unit of product has been established, this will afford a measure for judging whether or not the plant is being operated on a profitable basis from the technical standpoint. Since the technical department can exercise control over these various factors, the supervising personnel will naturally be obliged to see that their departments are operating as economically as possible.

It's time for MODERN Air Raid Protection!



WHEN it's open season for flies and mosquitoes, it's "A-penn" season! When squadrons of flying pests are nose-diving... or diving at your nose... then's the time to put A-penn Fly Spray into action.

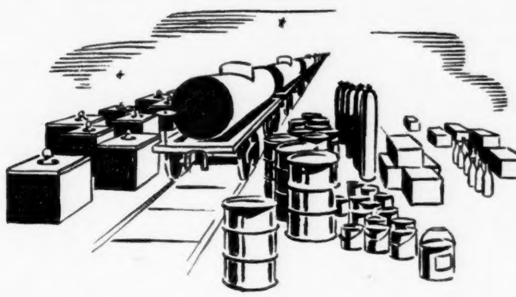
A-penn will not only establish mastery of the air for your side... but it's as pleasantly perfumed as it is positive in action.

Crown Can supplies the A-penn Oil Company with the containers in which A-penn Fly Spray is packed . . . and they are cans designed to protect the contents as effectively as the contents protect the home from insect pests!

CROWN CAN COMPANY, PHILADELPHIA, PA., *Division of Crown Cork and Seal Company*

CROWN CAN

BALTIMORE • NEW YORK • ST. LOUIS • HOUSTON • MADISON • ORLANDO • FORT WAYNE • NEBRASKA CITY



PACKAGING & CONTAINER FORUM

By Richard W. Lahey

Interprets Deposit Policy

An interpretation of the position of the Office of Price Administration with respect to deposit charges for containers of commodities on which ceiling prices are established under the General Maximum Price Regulation was made public last month by Price Administrator Leon Henderson.

The interpretation, in question and answer form and provided in response to a number of inquiries, is designed to prevent "chiseling" on OPA price ceilings, to promote the conservation and efficient use of critical war materials, and to help the trade meet an increasing shortage in some type of containers.

Containers to which the interpretation applies include bottles, barrels, drums, kegs, carboys, cloth bags, boxes, and the like. While the interpretation applies directly to containers of commodities sold under the General Maximum Price Regulation, the same general principles apply to charges for containers of commodities covered by other OPA price regulations, but in this instance a base level other than March usually will be used.

The questions and answers follow:

Q. Where a deposit charge was made for the container in March 1942—the base pricing period under the General Maximum Price Regulation—may the charge be continued?

A. Yes.

Q. May the deposit charge be increased over the amount charged in March?

A. Yes, provided the amount of the charge is not excessive under the rules stated below.

Q. Where no deposit was made in March for the container, may the seller now require a deposit charge in addition to the price which was in effect in March?

A. No, unless it was customary for the buyer to return the container to the seller. If the custom existed, the deposit charge which may be made must not be excessive under the rules stated below. If no deposit was required in March and the buyer did not customarily return the container, a seller who charges for the contents what he previously charged for both contents and container is obviously unlawfully increasing his charge for the contents.

Q. But can a seller impose a deposit charge when none was made in March and there was no custom of return, if at the same time he lowers his price?

A. Yes, provided (1) the deposit charge is made in good faith for the purpose of obtaining return of the container; and (2) the deposit charge is not excessive under the rules stated below. The good faith of the seller will depend primarily on whether he makes use of the returned container. Thus, a retailer of milk in quart paper cartons may not lawfully impose a three-cent deposit charge for the carton, even if he lowers his selling price per quart by one cent or two cents. It is obvious that the seller in these circumstances is interested not in the return of the unusable paper carton but rather in the strong possibility that a majority of his customers will neglect to return the empty carton, thus increasing the seller's real charge for milk. Good faith will always exist, however, if the reduction in price is as large as the amount of the deposit.

Q. Suppose a seller may and does impose a deposit charge under the conditions outlined in the preceding question and answer, what amount must he deduct from his March price for the container and contents?

A. An amount at least equal to the March 1942 value of the container after emptying. For example, the required reduction in the case of a commodity packed in a 55-gallon steel drum would be at least $1.25, (or $1.65 on the Pacific Coast), which is the maximum price established in Revised Price Schedule No. 43 for raw used drums of this size when sold by the emptier.

Q. Where a deposit charge may be added, may it exceed the deduction in price?

A. Yes, provided the charge is not excessive under the rules stated below.

Q. When is a deposit charge excessive?

A. This will depend upon the circumstances in each case. A deposit charge will never be excessive if it does not exceed the deposit charged in March, or the seller's reduction in his March price, or the seller's cost of replacing the container. If the container is readily replaceable and is easily destroyed or lost, or if it is sold for shipment out of the country and hence will not be returned, the deposit charge normally may not exceed the highest of these three amounts. But if the container is difficult to replace because of a shortage of the material of which it is made or diminution of production, the deposit charge can well be higher than the replacement cost, the reduction in price, or the March charge. If the replacement difficulty is great, the deposit charge can well be much higher than any of these standards, especially if, as will ordinarily be true in such cases, the container is not fragile. In short, the deposit charge must be designed to induce return and must be set at a level fixed with reference to the need for return. It may not be set at a spuriously high level designed to allow a seller an extra profit by virtue of inevitable breakage or loss.

Q. Specifically, what deposit charge will not be excessive in the case of a steel drum?

A. Because steel drums now cannot be replaced with new drums at any cost, a deposit as high as $6.00 on an 18-gauge 50-58 gallon steel drum is not excessive. The amount of the deposit permissible for steel drums of other sizes and gauges may be determined in line with the $6.00 figure.

Controls War Containers

Houlder Hudgins, Acting Director of the Division of Purchases, recently announced that he has set up within the division a new section designed to insure against waste of precious shipping space in American ships taking war materials and supplies to our far-flung troops and Allies.

It is called the container coordinating section and its functions are as follows:

1. To coordinate container and packaging standards and procedures to insure, in so far as reasonably possible, that shipments to the armed forces and others reach destinations in satisfactory condition.

2. To coordinate the efforts of the Army, Navy, Maritime Commission, and other agencies concerned with the problem of reduction of shipping space wastage by means of improved containers and packaging methods.

3. To organize and train a staff of inspectors who will work at terminal points through which shipments move, will report all instances of poorly designed containers and space wastages, and who will recommend changes to be presented to the War Procurement Agencies through the Section.

4. To apply to containers the policies of the Purchases Division and Purchase Policy Committee.

Albert Luhrs, who has been with OPM and WPB since last September as chief consultant on containers, has been appointed chief of the new section.

Mr. Hudgins said that a Container Coordinating Committee of the various war procurement agencies has also been set up. Mr. Luhrs is chairman of this committee. Also on the committee are representatives of the Army, Navy, Maritime Commission, Lend-Lease, Treasury Procurement, Office of Defense Transportation, Container Branch of WPB, and others that may be designated from time to time by the Division of Purchases.

The container coordinating committee of War Procurement Agencies is intended to integrate all problems dealing with the use of containers for the packaging of all of the nation's war materials and supplies.

The committee will:

1) Establish uniform specifications for containers and packing materials of all kinds.
2) Prepare uniform procedure for application of preservatives against corrosion, and for protection against moisture.
3) Provide information necessary for planning the procurement of containers.
4) Cooperate with the Containers Branch of the War Production Board so that the scheduled production of containers may be realized.
5) Consider cases of conflicting interests that may affect full production of containers and make recommendations for satisfactory solution.
6) Make recommendations to the proper branch of the War Production Board to alleviate possible shortage of containers and packing materials.
7) Prepare designs of containers that permit economical utilization of transportation facilities.
8) Prepare uniform procedures for packaging that result in efficient distribution of supplies in the field.

American Can Makes Fibre "Cans" on Present Machines

American Can Co. has developed a revolutionary method for the making of cans with fiber bodies on machines used for the manufacture of metal containers. This new method, which will be made available to the entire industry as soon as the new method has been thoroughly tried and perfected through actual production, is considered the most important development within the can manufacturing industry within the past decade. It brings hope to the vast number of American manufacturers of dry products whose merchandise was packed in cans, and whose business is threatened with dislocation by the various government orders restricting the use of present tin and metal containers.

The greatest merit, perhaps, of the new method, is that no new machinery is required. Another factor of merit of the new development is that the manufacturer of a product which uses the cans, also may use his existing packaging machinery. This is highly important, as the product manufacturer is faced with the same conditions as confront the can manufacturer in the matter of priorities.

The new method will come to the rescue of those products known in the trade as "dry" such as drugs, cosmetics, spices, powders, etc. A few liquid products, other than processed food, may also be affected.

Under the method developed, paper will be run through the various tin can lines. The fiber, cut to sheets of tin plate size, lithographed on the regular presses formerly used for lithographing designs on tin plate, will then be sheared and formed into bodies. The ends will be seamed on to the container with the regular seaming machine now in use.

Export License Needs

As of July 15, the following provisions govern all exportations of metal drums and containers and gas cylinders:

1. Metal drums and containers of a capacity of 10 gallons or less, when filled with commodities the exportation of which has been licensed, may be exported to all destinations under general license provided the drums and containers are of a type reasonably suited for the exportation of such commodities. Empty drums and containers of 10 gallons or less in capacity may be exported under general license to Canada, Great Britain and Northern Ireland, Newfoundland, Greenland, Iceland, and the U. S. S. R.

2. Exportation of metal drums and containers exceeding 10 gallons in capacity must be authorized by individual export license, except as specified below:

(a) All metal drums and containers, filled or unfilled, may be exported under general license to Canada, Great Britain and Northern Ireland, Newfoundland, Greenland Iceland, and the U. S. S. R.

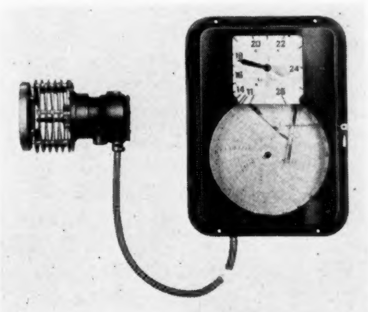
(b) Metal drums and containers, regardless of capacity, may be exported under general license (to destinations numbered 1 through 99) when filled with chemicals or petroleum products, the exportation of which has been authorized by an individual export license issued prior to July 15, 1942. Licenses authorizing the exportation of chemicals or petroleum products which are issued by the Office of Exports on or after July 15, 1942, will authorize the exportation of metal drums and containers to be used in exporting these commodities, provided the metal drums or

(*Continued on page 258*)

NEW EQUIPMENT

Radiation Pyrometer QC 186

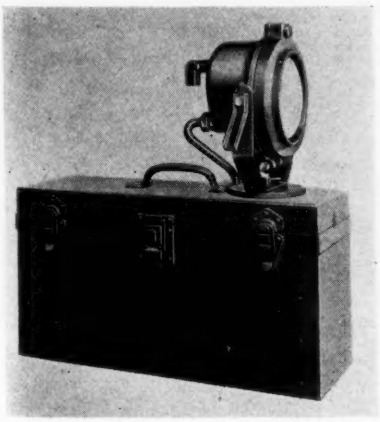
A new radiation pyrometer, known as the Pyrovac, has been developed by the engineers of The Bristol Company. This new instrument is designed for recording, indicating, or automatically controlling temperatures in furnaces and kilns above 900° F. The temperature-sensitive unit or radiation head is mounted on the outside of the furnace out of the hot zone where it picks up heat rays emitted from the object under measurement, thus registering its surface temperature.



The Pyrovac radiation pyrometer is intended for use in measuring and automatically controlling temperatures that fall into the following classifications: (1) High temperatures out of the range of the thermocouple. (2) Temperatures for which rare-metal thermocouples are used. (3) Surface temperatures, such as roof, wall, duct, lining, or retort temperatures and the temperature of the work itself rather than furnace or kiln temperature surrounding the work. (4) Where object is moving, is inaccessible, or where there are space limitations.

Portable Floodlight QC 187

A portable battery-operated floodlight has been announced by the Illuminating Laboratory of the General Electric Company especially for combustible areas



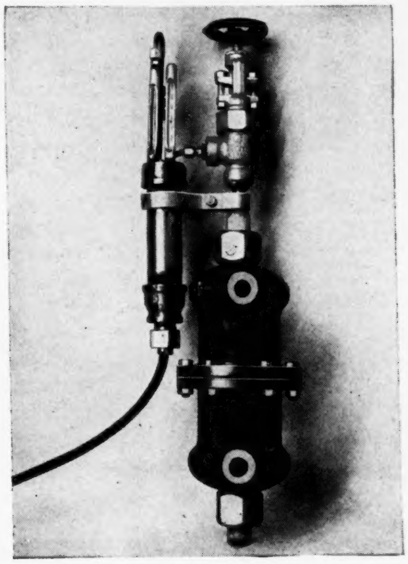
which cannot have installed lighting. This unit is intended for use in such places as powder igloo interiors, powder magazines, freight car and warehouse interiors containing combustibles, and during blackouts and other emergencies.

The floodlight consists of a small steel box (19" x 9⅞" x 20¾"), with a special dust- and vapor-proof lamp housing mounted on a bracket to allow pointing in any desired direction. A high-efficiency glass reflector, combined with pre-focus positioning of the unit's 50-candlepower concentrated-filament type bulb and a diffusive lens, gives a powerful medium-angle floodlighting distribution.

A 5-cell storage battery with nonspill valves is housed in the box. Quick exchange of discharged for charged batteries is made possible through a polarized connector permanently wired to the battery terminals. Normal burning time for the unit is approximately 10 hours.

Condensate Sampler QC 188

A condensate sampler for the electrical-conductivity checkup of steam or other condensate, is announced by Industrial Instruments, Inc. This device operates in conjunction with a suitable electrical instrument calibrated in direct-reading terms such as percentage of carry-over of soluble salts. The "solu-bridge," or the relay-operating "solu-bridge" controller for actuating a warning signal or corrective means, may be used with the condensate sampler,

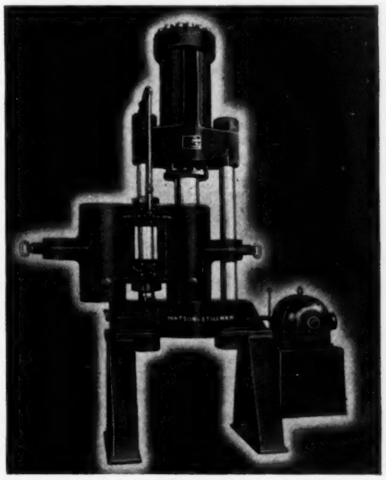


The cell holder admits the condensate into a chamber provided with a baffle and a two-way drain cock. At the bottom of the chamber is the conductivity cell. A thermometer indicates the temperature of the condensate, which is a vital factor in accurate conductivity readings. A sight gauge indicates the presence of oil which can be drained off by turning the drain cock to the oil-drainage position, thereby safeguarding the conductivity cell against contamination. The conductivity cell holder may be connected with any suitable condenser.

For a complete, inexpensive, ready-to-install job, the cell holder is available in combination with a newly-developed condensate cooler. The cooler comprises a heavy bronze jacket in which the condenser coil is cooled by the continuous flow of water. A high-pressure valve admits condensate from the coil to the adjacent cell holder. This combination equipment is arranged for easy installation with a minimum of elaborate mountings or plumbing.

Straining Press QC 189

A 200-ton-capacity hydraulic straining press, manufactured by The Watson-Stillman Co. strains or filters fluids under a pressure of 2000 lbs. per square inch. The machine has two cylindrical con-



tainers, each 10" in diameter and 33" deep, mounted on a swinging arm so that one may be filled while the press strains material from the other.

The press is completely self-contained, including 20-H. P. motor, 18-G. P. M. pump, and oil tank. The entire unit stands 14 feet high, weighs 15,000 lbs. and requires 5 feet by 3 feet of floor space. Control is by a single, lever-operated valve.

The main ram has a 33-inch stroke and operates in a double-acting cylinder. Two container lifting cylinders facilitate swinging of the containers between loading and straining operations.

Chemical Industries
522 Fifth Ave., N. Y. City.

I would like to receive more detailed information on the following equipment: (Kindly check those desired.)

QC 186 QC 187 QC 188 QC 189

Name ....

Title .... **Company** ....

Address ....

PLANT OPERATIONS NOTEBOOK

Salvaging Scrap to Win the War

By Ray Schmidt

Supervisor, Reclamation and Salvage Department Westinghouse Electric and Manufacturing Co.

There is a new slant today on the necessity of keeping scrap losses down. Before priorities, salvage was entirely on a cost basis. The amount of money saved decided how much was spent on salvage. Now, it's different. Cost, in many cases, is held secondary. Conservation of materials is a matter of self-preservation. In all Westinghouse plants we have consistently hammered the point home to our employes that our very jobs depend on efficient usage of time, materials, and tools.

In many cases, we are being forced to substitute more expensive materials, and this boosts unit cost. Reduction of waste and efficient salvage thus become even more important; they help maintain unit cost by partly balancing the expense of substitution, and the manufacturer is better able to meet competition prices.

It is said that salvage programs are fine for large plants but aren't practical in small ones. Large or small, there are opportunities for salvage that are overlooked. Last summer, I was in one shop after another, some of them right here in Cleveland, where ferrous and non-ferrous materials were badly mixed. Tool steel and nickel bearing steels were mixed with machine shop turnings and borings. The man who buys these discards will pay only for the gross weight at the unit price of the most inferior metal in the lot.

The organization of the plan to conserve and reclaim materials starts with design and ends with disposition of scrap. For discussion, I have divided the subject into five parts. Namely, simplification, standardization, substitution, reclamation, and disposition.

Simplification

The whole program must be organized from start to finish from the design engineer down to the lowliest workman. The engineer must design only to meet the requirements of the piece or apparatus. The design should be around accepted material standards and sizes to eliminate short ends. Scarce and critical materials must be avoided wherever possible. Check design to eliminate extra thicknesses, excessive weights. Much of the benefit from simplification is never secured because the manufacturing people are used to working to blueprint and specification. The surest way is to plan at the source.

Standardization

Naturally, the more types and sizes of product, the greater the problems. Sales, engineering and manufacturing executives should be continually studying the possibilities of reducing these. It is possible to make more of a fewer number of types and sizes with much less investment in materials and machines. So it is also possible to train new employes more quickly and eliminate waste time and motion.

There are over 4,000 SAE steels in existence, of which Westinghouse uses 300. Under present Government plans, there will be a lot less. It is no secret that the military strength of the Axis Powers comes from the establishment of a minimum of types and sizes in everything and then concentration on producing these standards.

Subcontracting is also made difficult by our failure to act more quickly along these lines. There are so many sets of standards that much valuable time is lost in negotiating, comparing, etc.

Substitution

If necessity is the mother of invention, so it is also the father of substitution. There is today no hide-bound adherence to tradition. We use whatever is available to do the job. Most engineers are only too willing to cooperate, and as a result many alternate materials are being used where even a year ago the suggestion would have met an indignant refusal. Many of these substitutions will be permanent, and in this sense at least, we will be securing good from an evil situation.

Reclamation

Here is a field with tremendous possibilities.

The first function of a salvage program is to prevent scrap and here is where the salvage head can make his salary many times over. The application depends largely on the individual problem and quantities involved, but large or small, every plant can use part of the program.

When short ends of sheets, plates and bars are used to make smaller pieces, the gain is equivalent to the difference between the costs of good and scrap materials. When lumber is burned and at the same time, new lumber is bought for shipping and packing, the loss is obvious. When old paper instead of excelsior is used for packing a definite gain is made.

When using any great quantity of oils, paints, and varnishes, it is possible to reclaim by simple and inexpensive means a good part of the waste. The loss of paint in spray booths is considerable. There are simple, inexpensive ways to trap this waste and convert the sludge into usable material.

Foundry operators know how tough it is to secure scrap on the open market. If machines are operated in connection with the foundry, it is often possible to use the scrap pile at hand as a source of supply.

When a study of the scrap received in the salvage department shows a high percentage of the same spoiled parts being received, the head of the manufacturing department, if advised, can often change some method to minimize the spoilage. Often tools are wasted by improper use; wrong methods of cutting are employed. The problem is reflected in the kind of scrap received and is always brought to the attention of those who can correct the condition.

This all sums itself up in the axiom, "Never scrap anything from which some useful thing can be made."

Disposition

In disposing scrap carelessness or ignorance is responsible for some real losses; superior grades of scrap are often mixed with inferior grades. This generally comes from the attitude, "I don't have enough to bother about." Tossed out on the trash pile a little bit at a

(Continued on page 243)

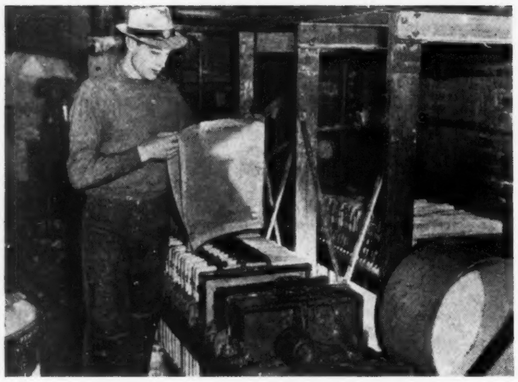
CHEMICAL SPECIALTIES

Shawmut Specialty Co., Boston, is using this new 1-gallon glass jug to replace the can it formerly used. Users report that it is easy to use, clean and contents are always visible, warning them when supply is low. Containers are supplied by Anchor Hocking Glass.

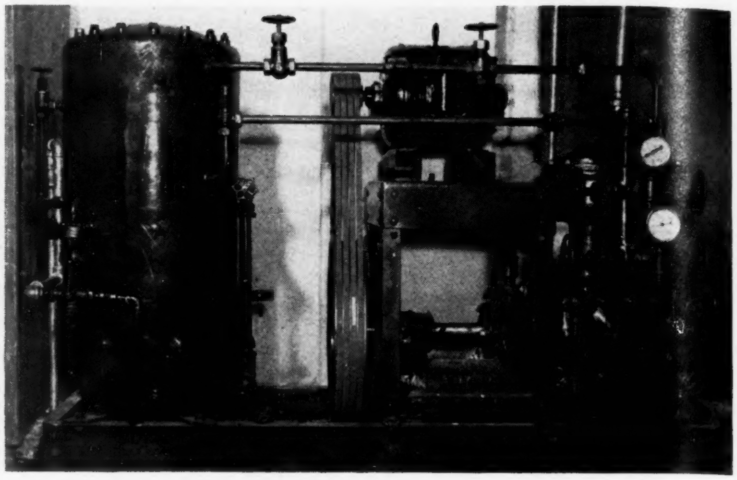
Industrial Agricultural Household

Fuld Brothers

"Make It for the Leaders"

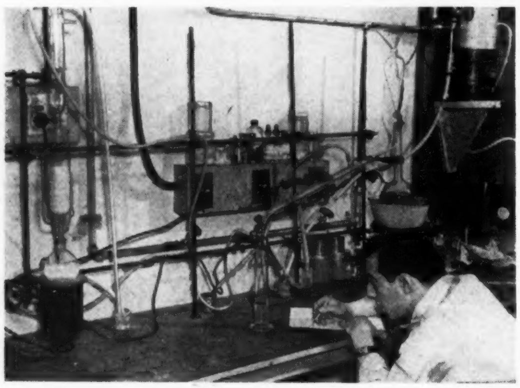


Workman at filter press which assures customers plenty of sparkling, bright liquid soap.



Refrigering unit for cooling liquid soap for the filter press (left).

Chemist ready to inoculate test tubes of bacteria prior to customary phenol coefficient test.



All incoming raw materials are rigidly checked in laboratory before being used in manufacture.

By Paul B. Slawter, Jr.
Assistant Editor

Down in Baltimore, the Fuld Brothers are making sanitary chemicals exclusively for the jobber in bulk or packaged under private label. Here's how they have built up what is probably the largest manufacturing organization of its kind in the country.

BALTIMORE—"the Heart of Maryland"—is the seventh city in the United States in population. Its principal products, according to Polk's Official Street Guide (1941 edition with map, 25c), are iron and steel products, ships, clothing, cotton goods, canned goods, meat packing products, sugar, oil, drugs and chemicals, paints, confectionery, roofing materials, shoes, hats, brick, boxes, furniture, bottles and glassware, bottle sealing devices, bags, mattresses, airplanes, electrical equipment, monuments, automobiles, tin containers, printing and publishing, fertilizer and radio apparatus.

If Polk's Official Street Guide had the space to expand any of those classifications it certainly would have men-

Above, the Fuld plant in Baltimore, retouched to block out a building in front.

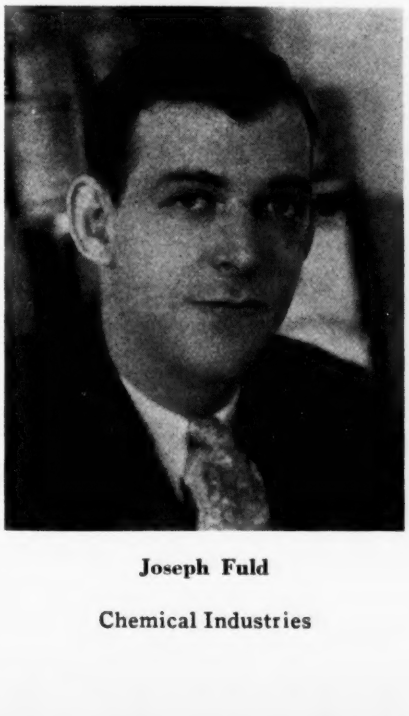
tioned—when it got to drugs and chemicals—that Baltimore also is the home of Fuld Brothers, probably the country's largest manufacturers of a complete line of sanitary chemicals exclusively for the jobber.

I went to Baltimore recently to get a story about this specialty manufacturer. The first thing I found out about the city was that it is probably the most mysterious place in the country to get around in. There is a trolley car or bus going in every direction but nobody in town knows how to get to South Wolfe St. which is where the Fuld plant is. At least nobody I asked did, and I asked plenty. The second thing I found out was that the taxicab drivers know where it is but they won't tell you which trolley to take. I got to the Fuld plant by taxi.

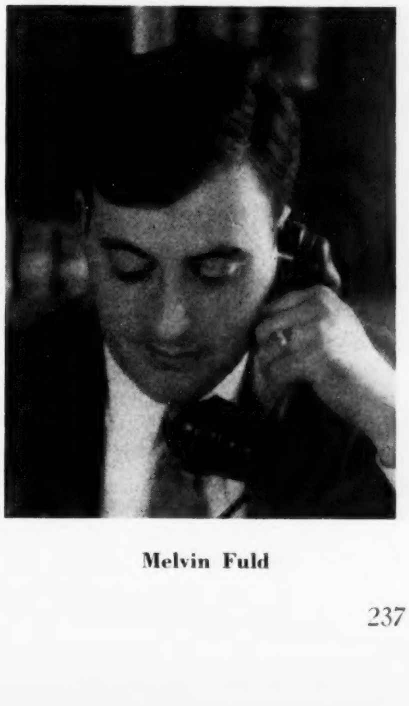
Joseph Fuld came to the reception room to greet me after I had given the girl my name and we went up a flight of stairs to his office. On his office door was a sign which I later saw throughout the plant, "Learn and Understand Your Job." I hadn't talked to Joseph Fuld long before I realized that he and his organization take the sign seriously. They know their stuff.

In Fuld's office, aside from the usual furniture, is a cabinet which seemed to contain samples of just about every sanitary chemical product ever put out. I knew as I looked over the labels—"Fulshine," "Glo-Zip," "Cleeno", "Cleenax," "Pine-A-Mite," etc.—that the story of Fuld Brothers was a long one; the list of products manufactured is tremendous. Accordingly, I asked Joseph Fuld to begin his story with the formation of the firm and work on from there.

The company, he told me, was organized in 1926 by his brother Melvin,

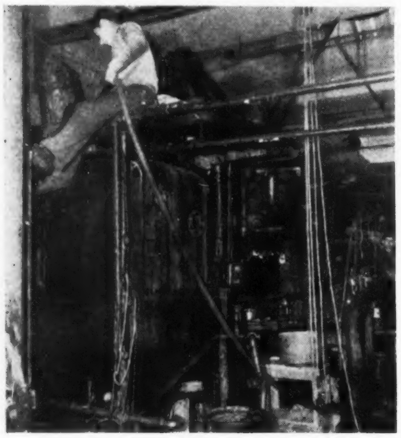


Joseph Fuld



Melvin Fuld

Fuld runs its own printing plant. This department prints all the private labels as well as the company's promotion work and advertising material.



Exothermic kettle where external heat is applied by automatic control. Used in manufacture of cleaning soaps.

Ingredients of metal polishes are first processed in various tanks and then put in final kettle where turbine mixers produce finished polishes.

who is an industrial engineer. Melvin got the idea for the company on his way back from Europe that year and it got under way as Leeno Products Co. He had a partner who was bought out by Joseph Fuld in 1927. Joseph had been working for another chemical company and was anxious to work with his brother in what looked to be a promising field.

Sometime later the company name was changed to Alpine Chemical Co. but this name was abandoned in favor of the Fuld name a few years after.

At first the company made liquid and scrubbing soaps and sold directly to the consumer. By the end of 1928 they abandoned the consumer business, let their salesmen go and went into the business of manufacturing for the distributor only.

The first plant was not a plant but a room on South Gay St. It was about the size of his present office. It had one cooking kettle and smelled to high heaven. As the business expanded, the next move was to South Sharp St. where the brothers took over a larger place with about 2,000 square feet. Here they added to the specialty line until they were producing 10 items—all sanitary chemicals for the jobbing trade exclusively.

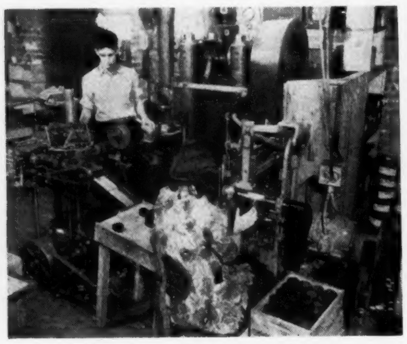
Next move of the company, Fuld said, was to West Pratt St. where they had 3,000 square feet of space. Here the company expanded greatly and soon the list of products totaled 40. "We did a lot of pioneering," he told me proudly, "and we were one of the first companies to make self-polishing waxes to sell to the jobber. We put these out when some of the larger companies were saying it was impossible."

The company was expanding rapidly now. It seemed that they would just get settled in one place when the business would overflow the capacity and it became necessary to move. Next move in Baltimore was to Frederick Ave. where 12,000 square feet of space were taken over. The line by this time included 100 products.

"It was about 1934, I think," said Joseph Fuld, "that we moved to our present location. We had one building at first; now we have practically the entire block—about 125,000 square feet of space. The B & O has a railroad siding at our door. Our first plant had three employees, now there are about 100. We also have a manufacturing unit in Los Angeles and a metal working plant in Beechwood, N. J. which makes fixtures, soap dispensers, etc. In normal times we manufacture about 450 sanitary chemical products but you realize that number has been cut down by war demands, priorities, etc."

The business, Fuld stressed, is 100 per cent for the jobbers. The company makes no label goods of its own and its products are exclusively sanitary chemicals. Joseph Fuld acts as sales manager of the firm and Melvin is production manager. Melvin handles purchasing of materials and gets them in shape to sell. Joseph takes over from there, even supervising the shipping department.

In all, there are 16 departments that make up this sanitary chemical manufacturing firm. First is the wax section which produces self-polishing liquid waxes (water-resistant and semi-water-resistant), powdered dance floor wax, paste wax, liquid wax (petroleum base), pigmented liquid wax (petroleum base),



Deodorant block machine presses blocks at 80-ton pressure. Block-wrapping machine automatically covers them with heat-sealed cellophane.

After automatic labelling of deodorant blocks they are packaged in tubes and an outside label is affixed. They are now ready for sale and shipment.

emulsion paste wax and self-polishing floor finish. All of these waxes undergo a 12-step laboratory test to assure perfection in use. They are checked for specific gravity, hardness, flexibility, alkalinity, wear resistance, lustre, slip resistance, drying, solid, water resistance, viscosity, and abrasion.

Second department is the liquid cleaner and oil soap section. In this category Fuld makes alkali-proof cleaner, wax-soap, seal-soap, liquid pine soap, pine scrub soap, liquid scrubbing soap, liquid household cleaner, concentrated scrub soap, rug and upholstery shampoo, liquid wax remover, rubber mat cleaner, liquid car wash pine jelly soap, oil soaps (35% and 45%), soft soaps, jelly soaps, surgical green soap, hard green auto bars, concentrated base soap, 65% scrub base soap, system base soaps 65%, oil soaps 65% and automobile oil soaps 65%. Here, a special exothermic control process—original with Fuld—produces a cleaning efficiency of high quality.

Third section—the liquid soap section—produces liquid hand soap, liquid toilet soaps, cocoanut base soaps, cocoanut oil base soaps, wet cleaning soap, surgical liquid soap, doctor's liquid soap, infant's liquid soap, castile liquid soap, cocoanut olive castile soap, cocoanut oil shampoo soap, mint liquid soap, mechanics liquid hand soap and liquid dog soap. These products, Fuld says, contain quality ingredients and are non-irritating.

In the disinfectant section, fourth department of Fuld Bros., the following products are manufactured: pine oil disinfectants (coefficients 3, 4 & 5), pine type disinfectants (coefficients 2 & 3), cresol disinfectants, B. A. I. disinfectants, cresol compound U. S. P., perfumed deodorant spray, perfumed disinfectants (coefficients 3 & 5), coal tar disinfectants (coefficients 2 to 8 incl.), powdered disinfectant, chlorine disinfectant, cutting oil disinfectant, cresylic acid disinfectants (coefficients up to 12), phenol disinfectants (coefficients 6 to 32, incl.), athletes' foot disinfectant and treatment and odorless disinfectants. These products are sold with a written guarantee as to percentage of active and inert ingredients, kind of active ingredients used, coefficiency rating (FDA methods) and solubility in solution.

Fifth section, insecticides, includes such products as roach powders, liquid roach spray, bed bug insecticides, odorless insecticides, fly sprays odorless fly sprays, pyrethrum sprays, vaporizing spray, cattle sprays, mosquito larvacide, moth sprays, moth treatments, ant insecticides, flea powders, rat poisons, rat bait, and mill and warehouse sprays.

Fuld makes the following polishes, (Department six); liquid metal polishes, paste metal polish, powdered metal polish, powdered aluminum polish, liquid aluminum polish, liquid silver cream, paste silver polish, lemon oil polish, metal lacquer, furniture creams, furniture polishes, furniture dressing, bar dressings and automobile polish.

Department seven is the floor seal and treatment section. In this department Fuld makes floor spray treatment, gymnasium seals, wood seals, penetrating seals, terazzo seals, wax-varnish, emulsified penetrating seal, mastic floor treatments, composition floor treatments, asphalt floor treatments, rubber floor treatments, mastic floor dressing, penetrating floor maintainer, gym floor cleaner, floor oils, bowling alley cleaner, concrete floor treatments, concrete floor paints, concrete floor dye, colored seals, aluminum paint, linoleum seal, rubber lacquer, linoleum lacquer, solvent for seals, concrete hardener and concrete patcher.

Under the heading of deodorant blocks, (Department eight), Fuld makes them in all sizes and shapes and for all purposes.

Liquid deodorants—Department nine—made by Fuld include odorless deodorant sprays, perfumed deodorant sprays, formaldehyde sprays, forma-chloro sprays, formaldehyde-eucalyptol sprays, pine deodorants, pine type deodorants, drip machine fluids, perfumed drip machine fluids, alcohol theatre sprays and perfumed theatre sprays.

In the plumbing and boiler cleaner section the company manufactures drain pipe cleaner and solvent, powdered closet bowl cleaner, liquid bowl cleaner, acid type bowl cleaner, scale solvent, tile cleaner, rust remover, sanitary deodorant and cleaner, chemical toilet crystals, septic tank conditioner, sludge remover, soot removers, pipe scale remover, boiler compounds and metal treatments.

Miscellaneous cleaners section produces a variety of compounds such as metal degreasing compounds, floor degreasing compounds, machine degreasing compounds, garage floor cleaners, rubber floor cleaners, paint and varnish removers, wood floor bleach, tile floor bleach, heavy duty cleaner, scouring powders, volcanic ash detergents, floor cleaners, wall cleaners, sanitary cleaning compounds, paste detergents, waterless cleaner, dry cleaner for paint, wall paint preserver, liquid window cleaner, fabric cleaner, spot removers, chewing gum removers, dry cleaning fluid, leather cleaner, blackboard treatments, tar removers, penetrating oil, weed killers, tombstone cleaner and fire extinguisher recharges.

Sanitation cleaners made by Fuld include powdered hand cleaners, powdered hand soap, chlorine powders, powdered dishwashing compounds, liquid dishwashing compounds, liquid glass cleaner, powdered glass cleaner and beer coil cleaner.

In the applicator and deodorant appliance section, Fuld manufactures lambs wool applicators, drip machines, deodorant block holders, moth block containers, perfume disseminators, automatic floor oilers and oil soap converters.

Fuld also makes soap dispensers (Department 14) and puts out such products as liquid soap dispensers, lather soap dispensers, cake soap dispensers, gravity valves, powdered soap dispensers, gravity soap systems and gravity soap tanks.

The technical department, for sanitary

Drain cleaner filling—after powder mixing machine completes mixture, material is fed into automatic machines for filling, capping and packing.

In private label department supervisor and staff affix the private labels. All cartons and drums are labeled to show contents.

supply dealers who wish to process some of their own products, offers a complete line of concentrates, sample cases, testing kits, perfuming compounds and aromatics.

Department 16 is a special section for those customers who wish to purchase small packages. All small package items are labeled by the company which has its own printing equipment. Small package items are available in waxes, liquid cleaners and oil soaps, liquid soaps, disinfectants, insecticides, polishes, floor maintenance products, deodorant blocks, liquid deodorants, plumbing specialties, miscellaneous cleaners and sanitation cleaners. Also available are lithographed packages of self-polishing liquid waxes.

Up to the time of the United States participation in this war as the Arsenal of Democracy, that is, before the needs for National Defense and War Production started to take vital materials away from Fuld Brothers, the company was expanding each year. Its products went to every one of the 48 states and also were exported to England, Europe and India. In 1941 the business volume was 30 per cent over 1940. In 1940 it was 15 per cent over 1939 and in 1939 it was 25 per cent over 1938. In the number of units produced it might be called the largest company of its kind in this country.

Naturally, the company is suffering from shortages of certain materials but it is using substitutes and developing synthetics wherever it is possible. Although not considered a war industry, Fuld Bros. has succeeded in advancing the idea that protection of health is as important as gun and ammunition and that the company as a producer of sanitary chemicals is a vital necessity. It has put out a poster proclaiming that "Sanitation Chemicals Defend the Health Front". It has secured government contracts for sanitation supplies which now total 7 per cent of the volume of business. "Understand, too," said Joseph Fuld, "that the jobbers to which the company sells also turn over a great deal of our output to the war effort."

Having fortified me with all this information, Fuld signified that he was ready to show me through the plant. We went through it from top to bottom and from side to side. I saw the accounting department where orders are received and checked and I watched the special procedure which is followed on priority orders. We stopped in the shipping department where the orders are assembled. I watched a load arrive from one of the departments with its "unit ticket". The boys checked it and then loaded it onto a truck and away it went. It was an A-1-a priority order.

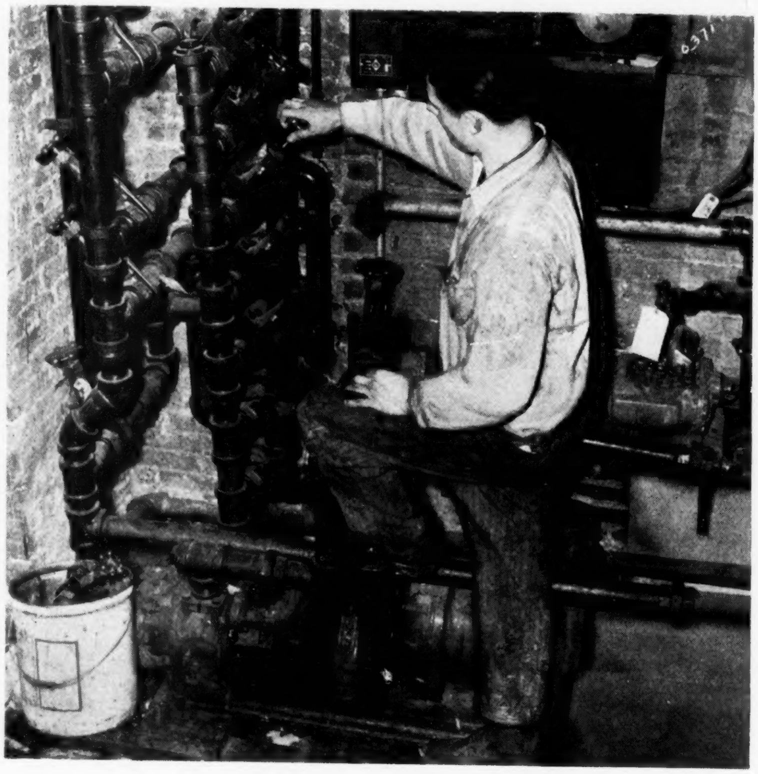
I went into the printing department and saw a fine array of equipment for the private label business of the company. Labels go from here to the private label department where they are affixed to the packages. This printing plant is also used by Fuld for its promotional and advertising printing.

In the private label department I watched the supervisor and her staff putting the labels on packages. All cartons and drums were labeled to show contents, Fuld pointed out, and also include the individual packer's number. As we were going from this department to the storage rooms, he pointed to the outside storage tanks which we could see from one window. Both raw and finished materials are stored in these tanks and underground tanks are used when ground storage is unsatisfactory. Automatic pumps flow the material into the plant.

I saw literally acres of storage space filled with finished drums, cartons, bottled goods, etc. Extraordinary precautions against fire were everywhere apparent and I noticed that the plant had a sprinkler system.

We went next through the manufacturing units of the plant. On the main floor I saw the monitor control board which controls the various incoming lines from the storage tanks. Automatic pumps are used to send raw materials to the manufacturing departments for formulation. We stopped at a huge disinfectant kettle which was in use. This is heated both by steam and immersion burners which are balanced to give the properties desired in the end-product. This particular kettle, Fuld told me, can manufacture 2,500 gallons of disinfectant per charge.

In another department a worker was preparing an exothermic kettle for the production of cleaning soap. This kettle is heated externally by automatic control. The wax kettles, too, were in operation and I noticed that there was a series of four for turning out self-polishing waxes. Wax from these kettles goes next to cooling units and from there to final storage.



Monitor control board controls various incoming lines from storage tanks. Automatic tanks are used to allocate the raw materials.

In the mixing department Fuld showed me the mixing kettles which are equipped for self-agitation and balanced for maximum efficiency. Deeper into the heart of the plant we visited the refrigerating unit through which the liquid soap is cooled to 32°F. and then is ready for filtering. We met Louis Eisenberg, chemist in charge of production, at one of the filter presses sending a batch of liquid soap through one of the tanks. We had to beat a hasty retreat from this room because he was clearing the air through the petcocks and it got a little too soapy for comfort.

From here on we passed through too many departments to remember. Fuld showed me the polish unit where metal polishes are processed and then put in a kettle where turbine mixers do the finishing. We looked at the tank filling apparatus, the self-polishing wax assem-

bling and storage room, the varnish settling kettles, batteries of mixers for blending floor finishes and a paradichlorobenzene mixer where perfume and paradichlor are fluffed after milling and then fed into the automatic deodorant block machine.

The deodorant block machine presses blocks at 80 ton pressure and passes them on to the block-wrapping machine. In another department I watched the girls packing and labeling this product. In still another department a worker was mixing powders in the first stage of manufacturing. Continuous mixers combine various types of powders before they go to the finishing department.

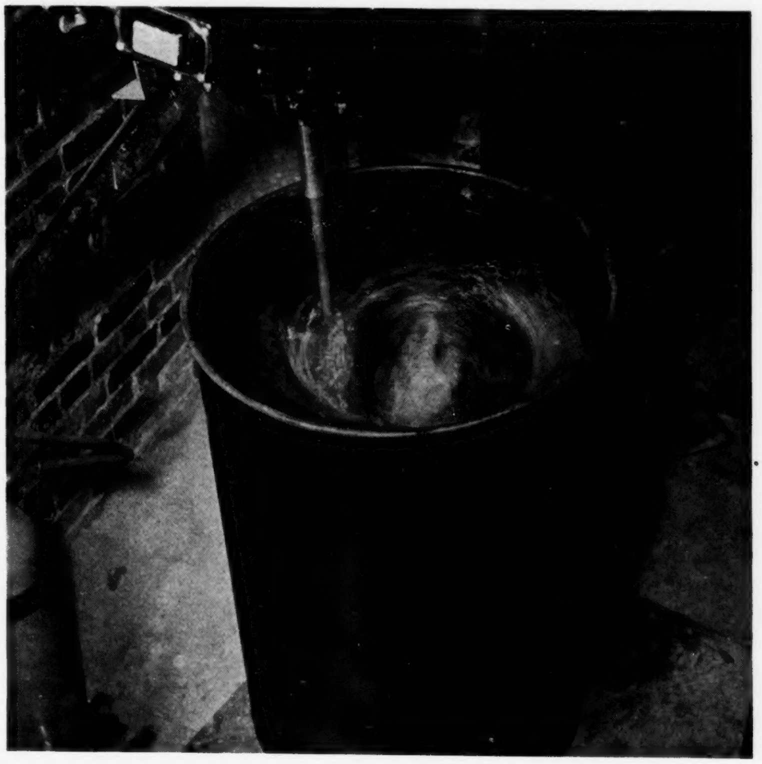
Downstairs we saw cans of drain cleaner being filled and the material being fed into automatic machines for accurate filling by weight. Cans are automatically capped and then packed.

Upstairs, amid bales of lambs wool, workers were assembling lambs wool applicators—another of the branches of the Fuld business.

"All of our finished products," Fuld told me as we proceeded into the laboratory, "are accurately controlled by rigid laboratory tests. Research is made on all products to ascertain exactly what standard must be matched so that the finished product will be absolutely uniform."

In the laboratory we met William W. Kayne, research chemist, who was hard at work on some phase of wax analysis. He showed me some of the things his laboratory was equipped to do. All the fundamental equipment was there—apparatus for weighing, drying, viscosity, specific gravity, pH value, titration, wear resistance, etc. A film applicator and wear machine, in another corner, were used to determine the horizontal and frictional wear of a wax sample.

Other tests were under way for lustre, falling abrasion, slip testing, and hardness. This latter characteristic is determined by a Sward Rocker. A film of known thickness is applied to a surface upon which the rocker is placed and the number of swings is relatively proportional to the hardness of the film.



Floor finish blending—whole batteries of mixers of this type are used in blending all types of finishes of which the company makes plenty.

All incoming raw materials, Fuld interposed, are rigidly checked in this laboratory before being used for manufacturing.

In another part of the laboratory he pointed out to me the apparatus for testing disinfectants. The assistants make their own bacteria cultures and each batch of disinfectant is tested to check its phenol coefficient.

"Naturally you realize," Fuld said, "that most of this information I am giving you applies to normal times. We are having our troubles now, as you can well imagine, in getting certain raw materials which we need for our business. Our research department works day and night on the solution to some of these problems and in some cases we've succeeded remarkably."

We went back to Fuld's office to discuss the future of the sanitation chemical industry and the outcome of the war. A caller was announced and Fuld excused himself to find out what was wanted When he came back he told me that it was one of his suppliers who had dropped by to inform him that a certain gum which they use in one of the wax products was no longer available. "See what I mean about our troubles?" said Fuld. He called up the production department and told them to stop making wax until Melvin Fuld got back from his trip. "Melvin's in charge of production," Fuld said, "I'll have to let him take care of this."

Then Fuld sent for his chemist and told him to drop everything and get to work on a substitute for this no-longer-available product.

Joseph Fuld thinks there will be amazing changes in his business after the war. He says that in his field they've only scratched the surface. The development of his industry, he thinks, will be tremendously advanced by the war because of the accelerated research which is necessary in finding substitutes and synthetics. "We're doing a lot of work on alternate products" he said, "—some good, some not so good, some even better than we had before."

"For instance," he said, "we've developed a substitute for natural resins in waxes which has worked very well with us."

His chemist told me then that they had worked actively on developing new uses for old products which are still available. He said that much work had to be done in developing synthetics for drying oils and for coconut oil. In the field of disinfectants the use of coal tar products in synthetics was being felt by his industry but the petroleum types had provided the answer. Pine oil disinfectants, he feels, are practically out and never will return to the extent of uses they had before.

Carnauba wax, now practically a stranger to this country because of the lack of shipping facilities, must have a substitute. In the development of sprays, he said, water bases are being used instead of alcohol. New compounds for cleaners are springing up all the time and there should be no shortage here. The chemist then excused himself to get back to work on the substitute materials for the wax manufacture.

I found out then that there wasn't anythng more to ask Joseph Fuld about his firm. He had told me about everything. About the only things I can report further in closing are that the firm has 12 salesmen, buys from about 300 different suppliers itself, sells to distributors and jobbers only, and that Joseph Fuld is an air-raid warden who spends practically no evenings at home these days.

"Just tell them Fuld makes it for the leaders," he said in conclusion, "that's our slogan and that's how we built up the business."

CHEMICAL SPECIALTY COMPANY NEWS

Paint Industry Lauded

EXECUTIVE board of the Painting and Decorating Contractors of America at a meeting in Detroit July 17 and 18 adopted a formal resolution expressing appreciation of the war efforts of the Paint, Varnish & Lacquer Industry and the National Paint, Varnish and Lacquer Association.

The resolution complimented the manufacturers for "their diligent research and investigation which made possible the necessary replacements and alternates to provide an adequate supply of paint materials for both war and civilian use which yield to the government its requirements for war and defense purposes."

Get Your Crown Booklet

Extra copies of Crown Cork & Seal Co.'s 50th anniversary book "50 Years of Beverage Bottling" are available and will be mailed out on request as long as the supply lasts.

Address the company at Baltimore, Md., for this unusual book on the growth and progress of the beverage industry.

Renu Buys Building

Renu Products, Inc., manufacturers of chemical specialties, recently purchased a five-story building at 11-24 31st Ave., Long Island City, N. Y., which is now occupied by the company.

This is the third time in 12 years that the company has found it necessary to increase plant facilities to meet demands on their 67 products.

"Complete Soap" Developed

Modern washing technique has resulted in the development of a "complete soap" whose introduction is rapidly supplanting the "rule of thumb" method of mixing soap and alkali.

Research staff of the National Oil Products Co. has evolved a compounded mixture of anhydrous soap and a series of especially selected alkalies to which have been added solvents and penetrants.

Nopco Complete Soap was prepared for use by launderers of commercial and institutional work where maximum cleanliness, whiteness and clean odor are essential. It possesses a uniform balance of alkali and soap plus the advantages of solvent action and penetration.

Its advantages include greater detergency because of superior soil-removing power; sufficient suspending ability to insure the retention of foreign matter so that it is easily carried away in the rinse; quick rinsing to save time and assure clean, odorless whites and fresh, bright colors, and specially selected penetrants insure the utmost stain removal with a minimum of bleach.

Fire Retardant Perfected

A new fire-retarding chemical designed to offer protection for war production factories, military establishments, wooden ships and buildings has been perfected by Dr. Walter Juda, refugee chemist from Nazi Germany, at Cambridge, Mass.

Dr. Grinnell Jones, who is associated with Harvard's Mallinckrodt chemistry laboratories, said that under his direction Dr. Juda has developed a secret formula known only as "F. A. M."

Declaring that first tests of the liquid chemical had shown that it was "better than many other substances in retarding fires in wooden structures," Dr. Jones said application had been made to the War Production Board for priorities to manufacture it on a large scale.

Tesco Buys Sudite

Tesco Chemical Co., Atlanta, Ga., has taken over the Sudite Chemical Manufacturing Co., long-time producers of cold water soaps, cleaning compounds and automotive specialties.

For the present, operation of the Sudite plant will be continued at the old address in Atlanta. When Tesco's new extension is completed, however, equipment and machinery will be transferred and all operations consolidated at the home plant.

Target Scouring Cleanser

Target Scouring Cleanser is a product of the Chemical Manufacturing and Distributing Co., Easton, Pa. Company makes soaps and sanitation chemicals and laundry and industrial chemicals.

FOREIGN LITERATURE DIGEST

By T. E. R. Singer

BOLETIM DO CONSELHO FEDERAL DE COMERCIO EXTERIOR Vol. V, No. 12 (Rio de Janeiro, Brazil) (1942) p. 8-9.

COMMERCIAL COTTONSEED PRODUCTION IN BRAZIL: The Brazilian production of cottonseed during the year of 1941 rose to 1,217,067 tons which represents an increase of 675,571 tons over the average annual production in the five years from 1932 to 1936. The state of Sao Paulo produces 74.8% of the total.

Cottonseed appears in the statistics of Brazilian exports not only as the oil bearing seed but also as bran and cake for fodder, and as vegetable oil. There is a noticeable change in the exportation of cottonseed and its products as a result of the war. Shipments of cottonseed, cottonseed bran and cake have decreased considerably due to the loss of European markets and the difficulty of ocean transportation.

The following tables show the drop in Brazilian exportation of cottonseed and its products since 1937.

Cottonseed

Years	Tons	Contos*
1937	65,744	19,355
1938	61,610	14,867
1939	55,403	12,715
1940	18,824	4,643
1941	2,457	732

*Conto=1,000 milreis.

Cottonseed Bran

Years	Tons	Contos
1937	11,802	4,285
1938	18,217	6,601
1939	19,353	6,581
1940	15,658	4,327
1941	8,857	2,083

Cottonseed Oil

Years	Tons	Contos
1937	21,844	40,452
1938	31,274	50,775
1939	23,223	30,248
1940	26,311	42,890
1941	33,458	82,859

Cottonseed Cake

Years	Tons	Contos
1937	206,067	78,077
1938	221,730	77,482
1939	208,444	78,556
1940	142,604	46,419
1941	31,960	7,747

CANADIAN CHEMISTRY AND PROCESS INDUSTRIES, Vol. 26, No. 6, June 1942, (Toronto) Catalytic chemistry in World War II. Development centre in petroleum technology. Hugh S. Taylor. Department of Chemistry, Princeton University. Address delivered before the Canadian Chemical Convention, Hamilton, Ont., June 1, 1942.

The focus of catalytic research and development in the present world struggle centres in the field of petroleum technology and the interconversions and interactions of petroleum hydrocarbons. Hitler's drives first to Roumania, and later towards the Caucasus, the Japanese advance in Malaya, the Dutch East Indies and Burma; the submarine campaign in the Gulf of Mexico and along the eastern seaboard of North and South America; rubber shortages here and in the United States, gasoline rationing, etc., all serve to indicate the central position that the hydrocarbon molecules occupy in the present international strife. Developments are so diverse, the pace of progress so rapid, that the areas of interest can only be outlined and typical achievements mentioned. The outstanding examples include: The catalytic production of high-octane rating gasolines from cruses containing initially no such valuable cuts; the catalytic production of aromatic hydrocarbons from aliphatic source materials; the catalytic desulfurisation of high-sulfur crudes; the catalytic utilisation of methane in natural gas and olefines from ethylene to the butylenes in the gaseous residues from cracking operations.

Successful operation of catalytic cracking requires that destruction of the hydrocarbon complexes with formation of "coke" be kept to a minimum. Revivification of the catalyst by burning with air involves its own problems of disposition of large quantities of heat. Also, the maintenance of catalytic activity is involved, since it is known that this latter is diminished by sintering which in its turn is promoted by the presence of steam. Such problems call for important but difficult investigations in the general field of crystal structures and their stability. Catalysts of the silica-alumina type, as well as silica-chromium oxide catalysts, may also be used to reform low octane cracked gasolines at temperatures in the neighbourhood of 450°C. with improved yields of gasoline of high octane rating. The C_4-cut of petroleum gases represents a fraction with the highest degree of technical importance at the present time. The isobutylene fraction is the raw material for the polymerisation process to yield di-isobutylene and, by hydrogenation, iso-octane. Sulfuric and phosphoric acids or the latter incorporated in solid support materials are the technical polymerisation agents. Isobutane is an important fraction since it has been demonstrated that interaction with butenes in the presence of sulfuric acid yields iso-octane directly by catalytic alkylation. Aviation fuels of octane numbers over 90 are produced in this manner. Both isobutylene and the butenes are raw material for synthetic rubber manufacture. Copolymers containing isobutylene with some 5% of butadiene employing boron fluoride as a catalyst at temperatures below 0°C. are the basis of butyl rubber. Synthetic rubbers of the Buna-S type contain around 75% of butadiene with the remainder of styrene, and demand, therefore, with the presently projected output, over 500,000 tons of butadiene. The catalytic dehydrogenation of butenes, —1 and —2, offers the most economical ultimate prospect for production although butadiene from alcohol will be called into service in the gigantic program now developing on the North American Continent. In the light of such war achievements it is difficult to imagine that synthetic rubber will not remain a powerful competitor of natural rubber in the days of peace for which we strive, and towards which we look forward with optimism.

PLANT OPERATIONS NOTEBOOK

(Continued from Page 234)

time, the amount of waste doesn't look like much. But once an effort is made to accumulate the desirable grades, it soon becomes evident how much can be saved. Segregation of certain kinds of scrap usually can begin at the machines where produced.

Men in manufacturing departments argue that their main job is to get out production; there is no time to bother with scrap. Today scrap is a commodity just as is a finished product. It is a by-product that we can't do without. A pound of primary substance contains a percentage of secondary material; e. g., ordinarily 100 pounds of steel contains 66 pounds of scrap. You can readily see what happens when the scrap is not available.

Conclusion

To repeat, the whole program should originate with the design engineer. He might well consider both the function of the product and the day when it will be scrapped.

The importance of the workmen's cooperation should be emphasized. Production workers have little, if any, awareness of the value of metals they work with. The foreman's job is to make workers salvage-conscious, and when foremen are thoroughly instructed and sold on the value of a salvage program, they become good missionaries to their workmen. In our company, the suggestion system is used with good effect.

Salvage programs, backed up by well planned salvage methods, effectively reduce costs, but, more important now, is that here is a way to conserve vital materials. That's a matter of great concern both to us and to the nation for materials will win the war.

Washington

(*Continued from page 160*)

Lind, Minneapolis, Minn., Dean, Institute of Technology, University of Minnesota; Dr. Frank C. Whitmore, State College, Penna., Dean, School of Chemistry and Physics, Penn. State College; Dr. Gustavus J. Esselen, Boston, Mass., President, Gustavus J. Esselen, Inc.; Carl S. Miner, Chicago, director, Miner Laboratories; Dr. Foster D. Snell, New York City, president, Foster D. Snell, Inc.; Charles O. Brown, New York City, consulting chemical engineer; Dr. Charles R. Downs, New York City, vice president, Weiss & Downs, Inc.; Sydney D. Kirkpatrick, editor, Chemical & Metallurgical Engineering; Dr. Fred H. Rhodes, Ithaca, N. Y., Director, School of Chemical Engineering, Cornell University.

A number of appointments of interest in the chemical industrial field have occurred in rapid sequence recently;

Colonel Louis Johnson, formerly assistant secretary of war, later on a special mission to the Far East, and a lawyer in private life, has been designated by the Alien Property Custodian to serve as president of the General Dyestuff Corporation of New York, after the APC had assumed control of this concern.

A Chemicals Transportation Advisory Committee has been formed to assist the Office of Defense Transportation on industry matters in this field; John Keeler, Koppers Company, Pittsburgh; H. M. Mabey, Mathieson Alkali Works, New York; J. W. Brown, E. I. du Pont de Nemours & Co., Wilmington; S. G. Moore, Pittsburgh Plate Glass Company, Pittsburgh; N. B. Chapin, Solvay Process Company, New York; C. H. Beard, Carbide and Carbon Chemicals Corp., New York; J. C. Sloss, General Chemical Company, New York.

The tremendous upsurge in alcohol production for war use has necessitated provision for special transportation arrangements; however, the ODT states that the system devised for feeding industrial alcohol to new smokeless powder plants and synthetic rubber producing centers, is working smoothly.

The above committee is in addition of course to the Traffic Advisory Committee on Industrial Alcohol, which was appointed in April.

Dewey L. Pierce, Riverside, Conn., formerly executive vice president and director, C. A. Woolsey Paint & Color Company, and New Jersey Paint Company, and connected in other directions with the paint industry, has been appointed commodity procurement advisor on paint, varnish, lacquer and waxes for the WPB.

James A. Perkins, Philadelphia, on leave from Princeton University where he was on the faculty, has succeeded Robert H. Macy, as price executive of the paper and paper products branch of WPB. Mr. Macy moved over to the office of the Quartermaster General.

Robert F. Bryan has been designated as price executive in the rubber price branch of OPA. Previous to entering governmental activities, he was an economist for the investment counsel firm of Edie & Company, New York, and instructor at Princeton, and later at Yale.

In connection with chemical processes much interest is being shown at WPB in salvage possibilities in the industry's various branches. One phase of the program shaping from this interest anticipates the recovery of approximately 100,000,000 pounds of essential chemicals through salvaging wasted spray paints, due to over-spray. Large quantities of pigments, phthalic anhydride, glycerine, oils, zinc yellow, glycerol phthalate resin, phenol formaldehyde, damar gum, alkyd resins, chlorinated rubber, ethyl cellulose, nitrocellulose, and plasticizers.

Questionnaires to the industry are the basis for the estimate of recoverable quantities from this source, data having been obtained from 350 firms.

More Salvage

Another salvage activity getting under way involved the recovery of fats and oils from 2,000,000 pounds of household fats annually thrown away. Under this plan these fats will be sold to some 300,000 meat markets which in turn will relay them to manufacturers, the most important product to be made being glycerine—one pound of waste kitchen fats, it is estimated, contains enough glycerine to fire four anti-aircraft shells.

In a sweeping revision of the fats and oils price structure OPA has fixed maximums on 19 imported vegetable oils, and adjusted price differentials between various grades of tallow and greases, rolling them back about 1 cent per pound as a move intended to ease the material cost to soap manufacturers, in Amendment No. 6 to Revised Price Schedule 53.

Chemicals shared with metals in the bulk of hundreds of thousands of tons of critical materials released from frozen inventories and diverted to war production in Priorities Regulation 13. This regulation set up new and uniform rules governing the release of immobile stocks including oils, fats, chemical metals, alcohols, imported chemical materials, and a long list of others.

Importers of English cresylic acid were informed that price increases since April 1941 not justified and that a price regulation would be forthcoming shortly.

Use of tinplate or terneplate cans on hand, or in process on July 1, instead of those in process by February 11, 1942, was permitted by the War Production Board in Amendment No. 1 to M-81, in behalf of cans for chemicals, paints, and other special products, manufacture of cans for which is limited by this order.

Xylol and xylol range aromatics derived from coal tar, are brought under control of General Preference Order M-150 by amendment No. 1. This order originally failed to cover a substantial part of such production.

The OPA, in Order 24 under GMPR, effective July 13, established a maximum of $15 per ton for a new chemical product designed to replace chrome ore in coloring glass developed by the Martin Dennis Company, Newark, N. J.

The OPA has supplied a formula to National Gypsum Company for establishing maximum prices for certain new wallboard products for government use in Order 26 under GMPR.

A maximum price for a paint applicator designed to meet a shortage of bristle paint brushes has been set on Order No. 27 of GMPR, by OPA.

Small purchasers of arsenic may buy requirements under a simplified procedure authorized by Amendment No. 1 to General Preference Order M-152, of War Production Board. Under this ruling, buyers of less than 500 pounds per calendar quarter will not be required to file any forms.

Distribution of aniline was taken under WPB control in Order M-184. Requests for September delivery were to be filed by August 10.

Tank trucks are continued exempt from the general ODT order No. 6 governing truck operations in local delivery service, under further ODT orders, as in ODT General Permit No. 6-6.

Maximum prices of $10 per net ton F. O. B. Grants, N. Mex., have been authorized by OPA in Order No. 4 of GMPR, for the Navajo Fluorspar Mines, of Grants, N. Mex., correcting a situation under which maximums could not be set for the grade mentioned by the company, fluorspar crude ore having a 70 per cent CaF_2 content, on a dry basis.

Prices for natural and synthetic pine oil have been set back at October 1941 levels by OPA, in maximum Price Regulation No. 179, effective from July 18.

Maximum prices for dry colors including chrome yellow, chrome green, molybdate orange and zinc yellow have been returned to levels of April 1, 1942, in OPA Maximum Price Regulation No. 180 effective from May 11, 1942.

Complete allocation for lithium compounds has been ordered for September 1, under Order M-191, which exempts deliveries of 25 pounds and under in any one month.

Wholesalers and distributors in United States territories and possessions are exempted from inventory restrictions imposed under Limitation Order L-63 by Exemption No. 7 to that order by WPB.

OPA, through Commodity Practices

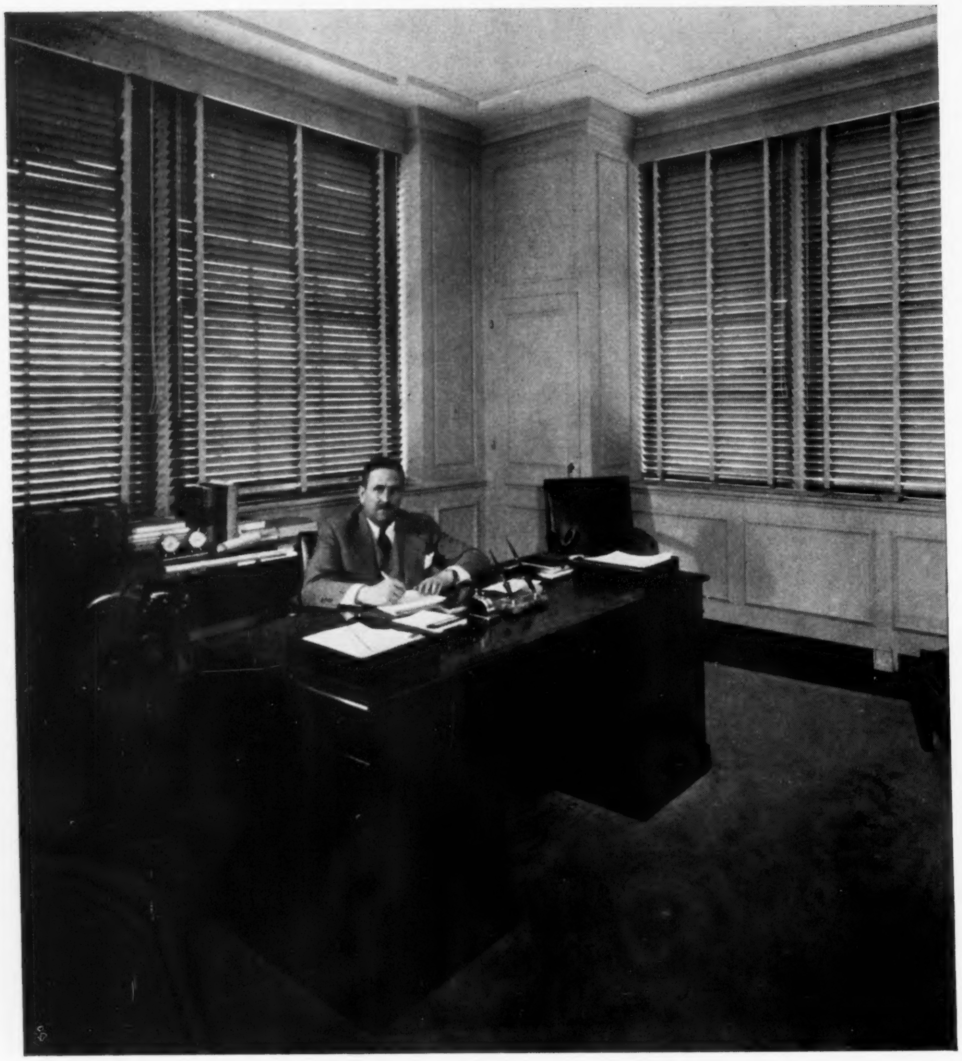
(*Continued on page 258*)

BROMINE
BROMIDES

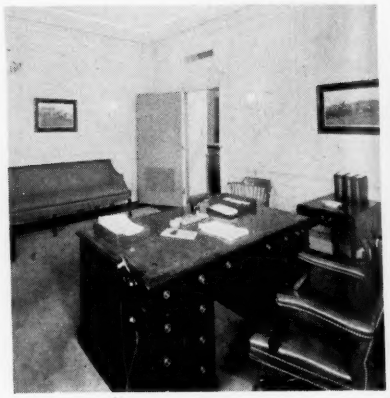
PRIOR CHEMICAL CORPORATION · NEW YORK
420 LEXINGTON AVENUE
Chicago Office: 230 North Michigan Avenue

Sole Selling Agents for
Great Lakes Chemical Corporation
Filer City, Mich.

New



Paul Kendall, executive vice-president of the company.



Another view, same office.

N. J. Hooper, vice-president in charge of sales.

Dr. H. I. Cramer, Rubber Chemical Dev.

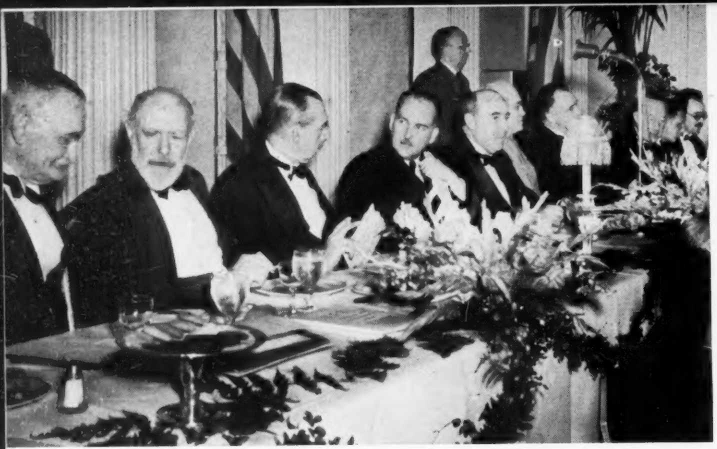
Sharples Offices in Philadelphia

Illustrated here are seven pictures showing the most important details of the new Sharples Chemicals Inc. offices at 23d and Westmoreland Streets, Philadelphia. All of the new offices, as you probably can deduce, are fully air-conditioned and entirely modern in construction and appointments. Plant and research laboratories of this Synthetic Organic Chemicals manufacturer are located at Wyandotte, Mich. Sales offices, other than this one, are in Chicago, New York and Salt Lake City.

Reception room of the new executive offices.

Dr. George Hinds, Research and Development Department.

J. J. Schaefer, V. P. in charge of Research and Development.



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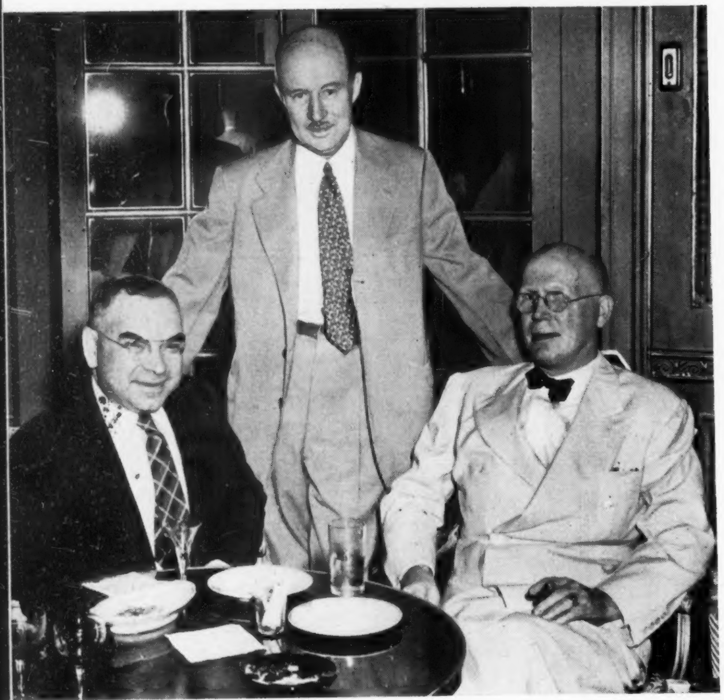

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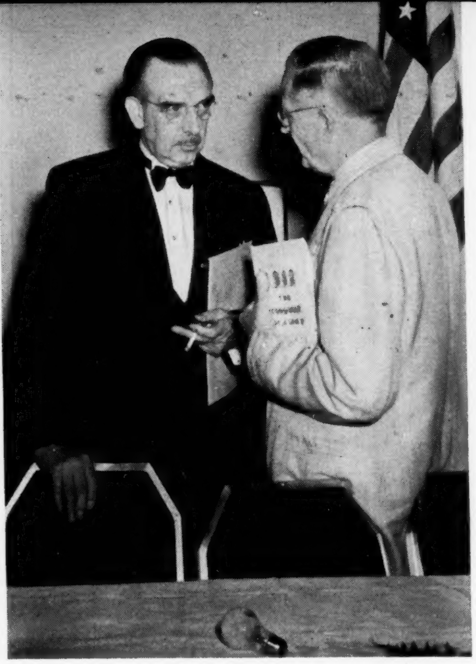

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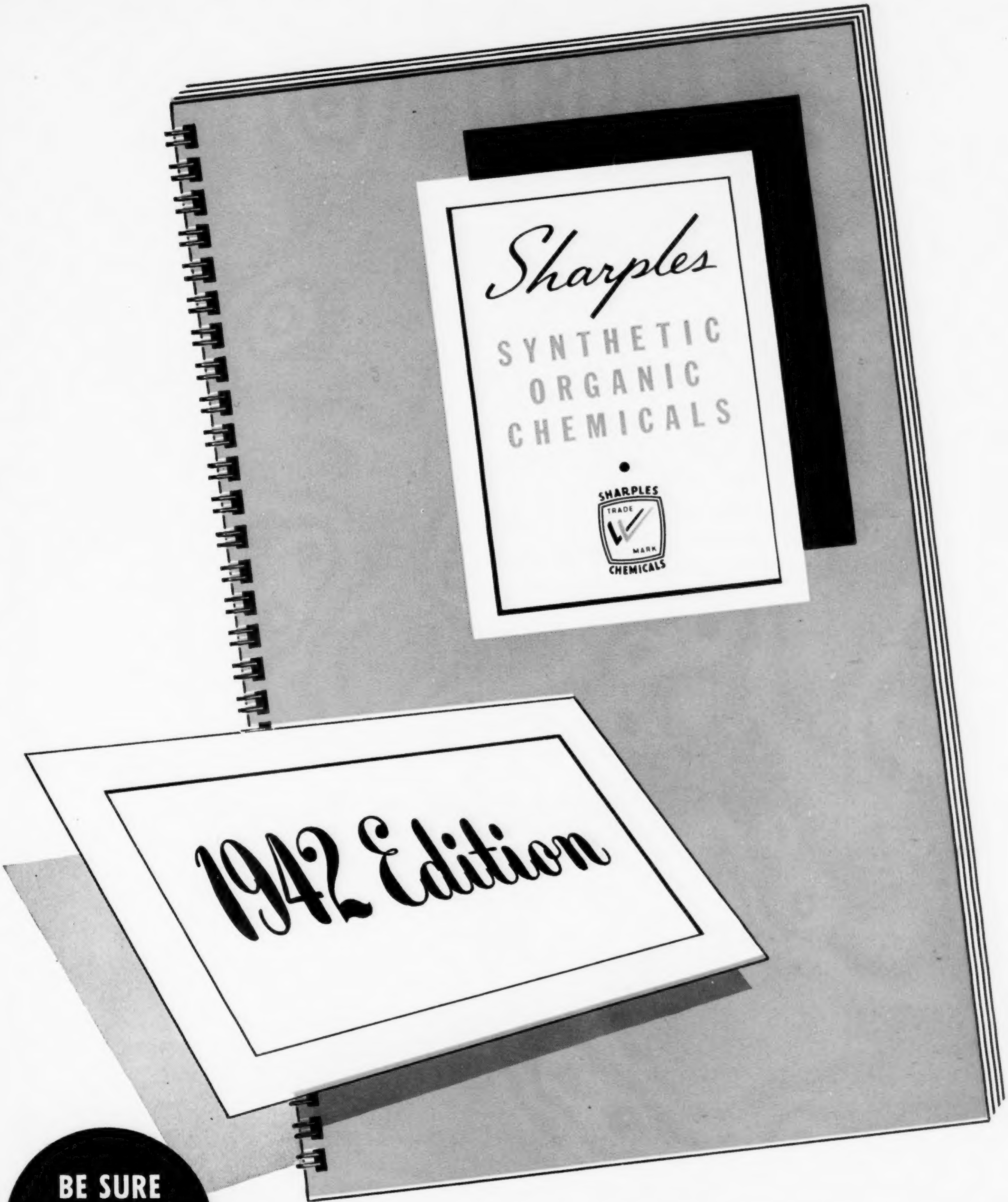
Agfa-Ansco Celebrates Contennial Anniversary

Agfa Ansco celebrated its centennial anniversary July 23d with a dinner at the Waldorf-Astoria attended by many notables in the industry. At the ceremonies the company announced (1) a color film which amateur and professional alike can develop in the dark room; (2) that Ansco was entering the optical prism field and (3) that Ozalid Products had successfully developed a brand new technique in sound film, that of photographically embedding sound tracts on dye-impregnated and sensitized cellophane tape.

These photos were taken at the ceremonies.

(1) Seated at speakers' table, from left to right: Percy Y. Howe, George Murphy, Inc.; E. Davis, Scovill Manufacturing Co.; A. E. Marshall, general manager of Ansco; Lt. Commander E. J. Long, Chief, Pictorial Section, U. S. Navy; Dr. Robert E. Wilson, member board of directors of General Aniline and toastmaster of the evening; Lt. Col. James A. Reilly, U. S. Army; Robert E. McConnell, member board of directors of General Aniline; George M. Moffett, also a director; Thomas E. Brittingham, Ozalid Products; and L. W. Sipley, Curator of the American Museum of Photography.
(2) Left to right: Ben Klein, Klein Goodman Co., Phila.; James Forrestal, Agfa sales manager; Harry Monson, manager Agfa Cincinnati Branch.
(3) Left to right: Lieut. Col. James A. Reilly, U. S. Army; Robert E. McConnell, President of General Aniline and Film; and George M. Moffett, director of General Aniline.
(4) Left to right: Charles W. Cannon, manager Agfa New York Branch; Col. M. E. Gillette, U. S. Signal Corps Laboratory, Astoria, Long Island; B. D. Jennings, Agfa Raw Film Corporation, New York City; T. J. Maloney, Publisher of U. S. Camera.
(5) A. E. Marshall answers questions of guests on new developments.
(6) Left to right: Charles W. Cannon, manager Agfa New York Branch; C. T. Underwood, President of Underwood and Underwood Illustration Studios; A. F. Hofmeister, manager Agfa San Francisco Branch.



BE SURE TO GET YOUR COPY

The 13th Edition of "Sharples Synthetic Organic Chemicals" is just off the press. This Booklet contains useful information on more than 150 Sharples Products, presented in such a form that it should serve as a buying guide as well as for technical reference. If you have not received your copy, one will be sent on request.

SHARPLES CHEMICALS INC.

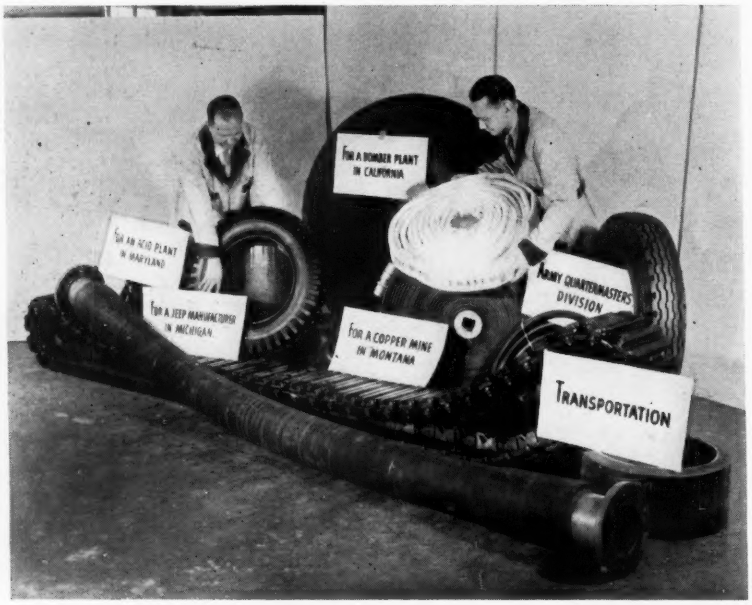
PHILADELPHIA **CHICAGO** **NEW YORK**

SHARPLES TRADE MARK CHEMICALS

1

Shots from Here & There in the Chemical Industry

(1) At a "Shirt Sleeve Session" sponsored by the Advertising Club of St. Louis July 21, Dr. Francis J. Curtis (left), development director of Monsanto, Mrs. Thelma Lison, director of home economics and Anthony W. Neally, vice-president, Gardner Advertising, were guest speakers. Dr. Curtis told about materials and products that are coming out of laboratories. (2) Rubber industry is still keeping busy turning out "1-A" war essentials. Here is a corner of the shipping room at a B. F. Goodrich plant. (3) This 70-year-old shock absorber turned up in the salvage program at a Goodrich plant. Reclaimers say it is the oldest rubber product they have ever seen which has reclaim value. (4) Five hundred thousand volts of electricity streaking over the fins of a five-foot porcelain insulator at Westinghouse.



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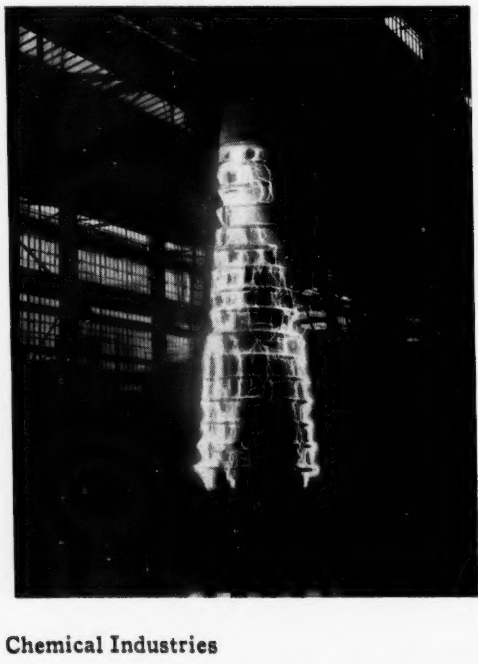

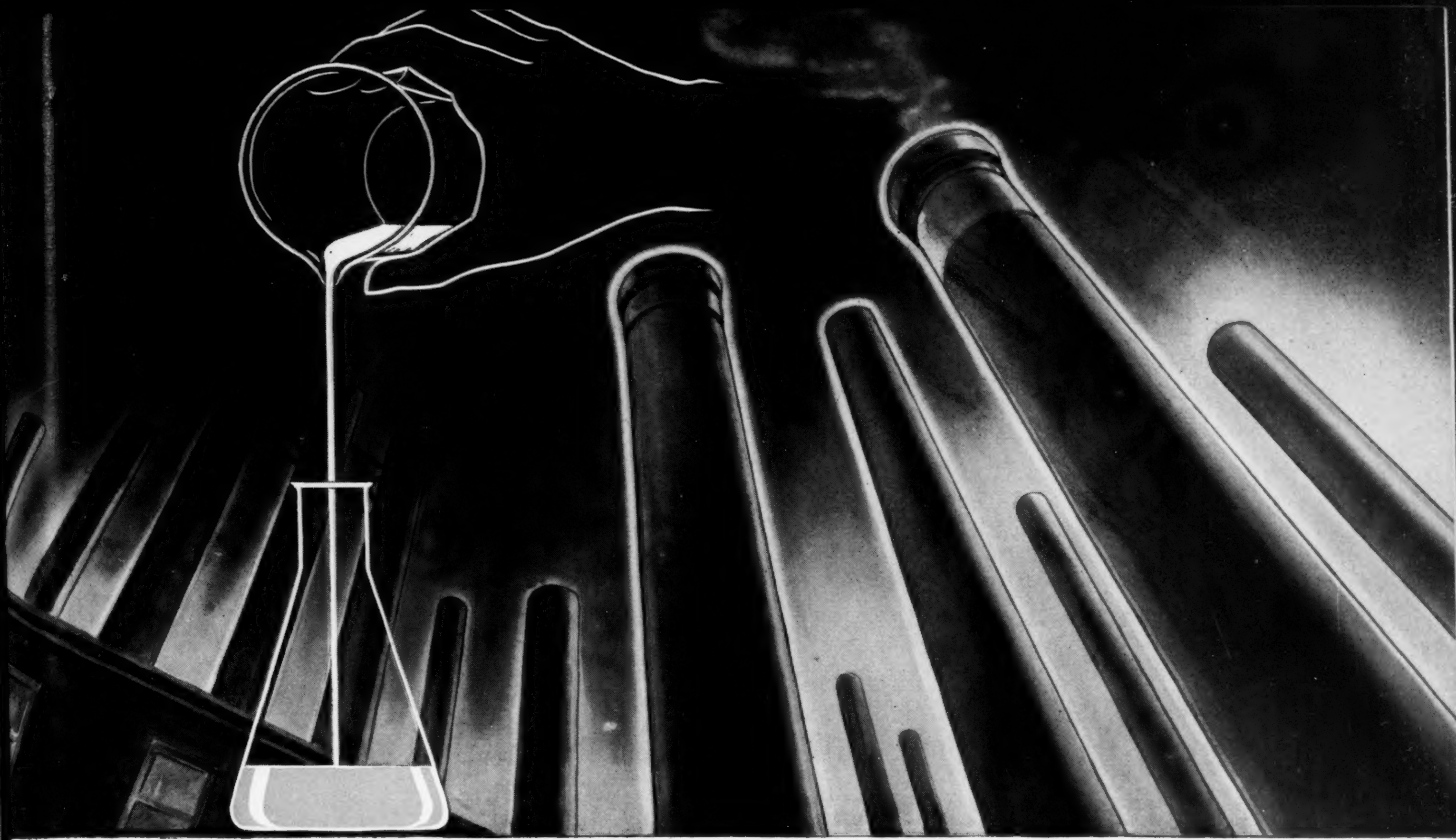

Baker OFFERS PURITY BY THE TON IN CHEMICALS MADE TO EXACTING SPECIFICATIONS

. . . for chemists bombarded with war-time problems!

Today — Most chemists are really *two* chemists in *one*.

Peace-time chemists are engaged in new fields, confronted with new problems.

Theirs is emergency work — and their need for tonnage chemicals of exacting specifications is more urgent than ever. More than that, these chemists want to be sure that such chemicals are readily available at all times.

It has been the privilege of the J. T. Baker Chemical Co. — in peace-time and now in war-time — to supply industry with tonnage chemicals of unusual purity.

We invite you to call upon Baker . . . and to rely upon Baker as a reliable source of supply. It may be that, in certain industries, some companies now making their own tonnage chemicals would like to free their plants of marginal operation.

Baker will gladly contribute the combined knowledge of its Technical, Executive and Manufacturing staffs to meet any war-time problem.

J. T. Baker Chemical Co. ***Executive Offices and Plant:*** **Phillipsburg, N. J.** ***Branch Offices:*** **New York, Philadelphia and Chicago.**

Baker's

INDUSTRIAL CHEMICALS

CHEMICALS
THAT TURN NIGHT INTO DAY

IN THOUSANDS of American plants fluorescent lamps are truly changing night into day. This remarkably efficient lighting system, which has grown from an idea to a major industry in the brief span of five years, is playing an outstanding role in helping to increase America's war production.

Chemicals are an important factor in the proper performance of fluorescent lamps. In their production large quantities of highly purified chemicals manufactured to exacting physical standards are required. In many cases these specifications are even more rigid than those for laboratory reagents. Mallinckrodt pioneered in this field, cooperating with fluorescent lamp manufacturers in developing many chemicals of suitable characteristics, and establishing processes which would insure adequate supplies of these essential materials.

This is but one example of the many industries with which Mallinckrodt has cooperated to make available necessary supplies of special chemicals. If you need chemicals of unusual characteristics—purity, bulk, water content, etc.—to meet the exacting specifications of a special process or some unusual production problem, perhaps we can help you. Why not write to us today?

Address all communications to Technical Service Division

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NEWS OF THE MONTH

GOVERNMENT

Egloff Testifies on Oil

"To produce 3000 bbls. daily of gasoline from coal at England's $40,000,000 hydrogenation plant at Billingham, requires the labor of 6000 men, whereas in this country a $2,000,000 cracking plant with petroleum from a single well and the labor of 150 men could manufacture the same amount of gasoline and at about one-third the per-gallon cost," Dr. Gustav Egloff, Chicago, research director of Universal Oil Products Co., testifying June 18 at the House Mines and Mining Committee's gasoline-from-coal hearing.

Dr. Gustav Egloff

Dr. Egloff highly praised the coal research work being done by the U. S. Bureau of Mines.

"We haven't tapped our oil resources as yet, although it is becoming a little more difficult to locate," said Dr. Egloff, adding that he had a theory that petroleum is being made at the present time "probably faster than we can consume it."

"There is a periodicity of the prognostications that we will soon be out of oil," Dr. Egloff added.

He said he had a graph of these prognostications, showing that as early as 1860—the year after Colonel Drake brought in the first oil well in the U. S.—there was a fear of oil exhaustion.

Chairman Randolph of the gasoline-from-coal subcommittee questioned Dr. Egloff about his opinion as to Germany's oil supplies.

Germany, in cleaning up the Low Countries and France in 45 days, used 12,500,000 bbls. of oil, said Dr. Egloff. But the Nazis got 20,000,000 bbls. from French stocks, and another 40,000,000 bbls. a year from Poland.

In the German drive on Russia, the Nazis were consuming oil at the rate of 250,000,000 bbls. a year—or more than 21,000,000 bbls. monthly on the average. Top estimates of available oil supplies to Germany, synthetic and natural, are 135,-000,000 bbls. a year, with lowest estimate at 98,000,000 bbls., according to Dr. Egloff's estimates.

Standard Oil Again

They're still after Standard Oil of New Jersey!

A special assistant of the attorney general told the Senate Patents Committee August 3 that Standard Oil of New Jersey, prior to the war, had "surrendered its freedom of action in the chemical industry into the hands of the largest industrial corporation in Germany."

He was tracing the patent pooling arrangements between Standard Oil and I. G. Farbenindustrie when he made the statement.

Through those arrangements, he said, "In substance, Standard agreed to refrain from going into any chemical business in the future except as a 'junior partner' of I. G. and agreed to remove itself from and stay out of the oil industry except in Germany."

Insecticide Committee

One of five industry advisory committees announced July 27 by the WPB represents the household and industrial insecticide manufacturers. On it are W. H. Moyer, government presiding officer; W. O. Beuttner, Brooklyn; H. W. Hamilton, Kearny, N. J.; J. Powell, N. Y. City; and W. J. Zick, N. Y. City.

Twenty-Six Indicted

Twenty-six manufacturers of insecticides and fungicides and the Agriculture Insecticide & Fungicide Association of New York were ordered by the Federal Trade Commission July 26 to cease price fixing and other practices "having the tendency and effect of restraining and suppressing competition."

The order also was issued against eleven officers and directors of the association.

The F. T. C. said the association was organized in 1934 and had operated as a clearing house for exchange of statistical, price and trade information among the members. In that connection, it said, the members reached agreements "to fix and maintain uniform prices, terms and discounts."

The companies named in the commission's announcement:

Acme White Lead and Color Works, Detroit; the American Agricultual Chemical Company, the American Cyanamid and Chemical Corp., Derris, Inc.; George W. Colt & Co., Inc.; John Powell & Co., Inc.; General Chemical Company, Inc., the Stauffer Chemical Company, Inc., Phelps Dodge Refining Corp., and Tennesee Corp., all of New York City; the American Nicotine Company, Inc., Henderson, Ky.; the California Spray-Chemical Corp., Richmond, Calif.; the Chipman Chemical Company, Inc., Bound Brook, N. J.; the Hercules Glue Company, Ltd., trading as Colloidal Products Corp., San Francisco; the Commercial Chemical Company, Memphis, Tenn.; Dow Chemical Company, Midland, Mich.; E. I. du Pont de Nemours & Co., Inc., Wilmington, Del.; the Latimer-Goodwin Chemical Company, Grand Junction, Col.; the Niagara Sprayer and Chemical Company, Middleport, N. Y.; the Nicotine Production Corp., Clarksville, Tenn.; the Sherwin-Williams Co., Inc., Cleveland; the Southern Acid and Sulphur Company, Inc., St. Louis; the Tobacco By-Products and Chemical Corp., Louisville, Ky.; the J. W. Woolfolk Company, Fort Valley, Ga.; Ansbacher-Siegel Corp., Brooklyn, and J. M. Taylor, E. P. Brown and E. W. Parker, trading as Taylor Chemical Works, Ltd., Aberdeen, N. C.

Individuals listed, all officers or directors of the association, were R. N. Chipman, L. S. Hitchner, June C. Heitzman, H. D. Whittlesey, H. P. Mansfield, J. B. Cary, J. H. Boyd, A. J. Flebut, R. E. Demmon, G. F. Leonard and G. Eriches.

The commission said charges were dismissed against five corporations named in the original complaint, all of which had ceased doing business, and against the Pittsburgh Plate Glass Company, Corona Chemical Division, Milwaukee, "which since 1936 has not co-operated with any of the other respondents in their activities."

COMPANIES

Foxboro Honored

Foxboro Co., Foxboro, Mass., makers of measuring and controlling instruments for industrial processes, was awarded the Minute Man flag of the Treasury Depart-

ment, on July 8, in recognition of payroll allotment subscriptions by over 95% of its employees.

Dicalite Expands

To accomplish more concentrated coverage of the southeastern states, Dicalite has opened a new district office in Atlanta, Ga. L. S. McCollum is the new manager of the southeastern district.

Dicalite Co. has established an asphalt section in the laboratory at its California plant. Complete equipment has been installed to carry on in a larger way research and test work on the use of diatomaceous silica fillers in asphaltic products.

Immediate emphasis is being placed on camouflage paints which assumed great importance during the last few months. Diatomaceous silica is in demand for its flatting properties as well as for the toughness and non-blistering qualities it imparts to asphaltic and other paints.

Rosa Forms Own Company

B. M. Lobo Rosa, 49 Rua do Arouche, Sao Paulo, Brazil, has resigned as assistant manager of E. L. Weldie, a position he has held for the past three years.

He has organized his own firm, operating as purchasing agent and handling heavy chemicals, color and pigments, naval stores, fats and oils, fertilizers, solvents and paint materials, fine chemicals, roller mills materials and mixing equipment.

Hercules Women

To handle an expanded research program 90% devoted to the war effort, Hercules Powder Co. has employed a group of women chemists and also instituted a night research shift at its central Experiment Station laboratories.

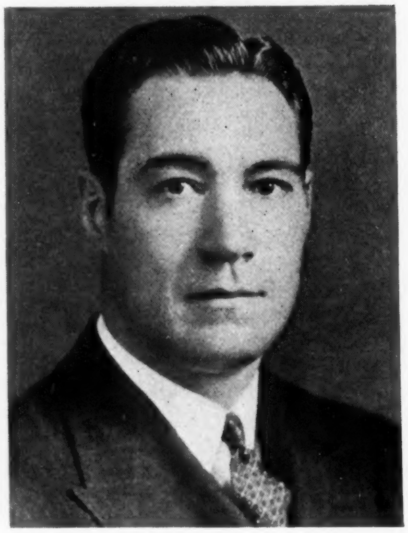
This wartime basis for chemical research operations was announced recently by Dr. Emil Ott, in whose three years as director of Hercules research its staff has been doubled and its sphere of laboratory investigation widened.

There are more than 204 trained chemists and a total research staff of more than 600 men and women now working in the 15 buildings located on a 300-acre plot of land on the outskirts of Wilmington, Del. Research expenditures at this Experiment Station in 1942 will approximate $1,500,000.

All Time High at Du Pont

Production of Du Pont materials required for the war emergency, whether of chemicals or explosives, is at an all-time high, Walter S. Carpenter, Jr., president of E. I. du Pont de Nemours and Company, announced in a statement to stockholders last month.

Promoted by McKesson



Charles T. Lipscomb, Jr., nationally known in the drug and chemical fields, has been elected a vice-president of McKesson & Robbins.

He will be attached to the administrative offices in New York where he will be in direct charge of the company's industrial chemical division, succeeding Charles Hermann who has resigned.

Mr. Lipscomb joined the staff of the Vick Chemical Co. in 1929 upon his graduation from the University of North Carolina, and rose to the position of sales manager for the Southern region with offices in New York.

Plant expansion on an unprecedented scale, largely constructed and operated for the account of the government, has involved expenditures totaling several hundred millions of dollars, he said. Every construction project has been completed in advance of contract schedules, and similarly, all production schedules have been met or exceeded.

The six months period just ended has marked the practical completion of a significant transition, Mr. Carpenter stated, to satisfy the imperative requirements of the military and the essential civilian needs of a nation at war. In contrast with manufactures today, sales of military products for the 20-year period prior to the present war constituted less than two per cent of the total, with approximately 98 per cent chemical products to meet the normal peacetime needs of the people.

New Goodrich Department

A chemical and pigments department of the purchasing division of B. F. Goodrich Co. was created recently and Dr. V. E. Wellman appointed its manager.

New department will be responsible for the development of new sources of these materials and the procurement of them for both the chemical products and rubber manufacturing divisions of the company.

Wheelco School

A school to enable plant and office employes to gain a greater knowledge of instruments, their construction and their use by America's war industries, has been established by Wheelco Instruments Co., Chicago manufacturers of industrial temperature measurement and control instruments, combustion safeguard equipment, and electronic controllers for all industrial applications.

Essential Oil Book

A comprehensive book listing and describing all essential oils grown and distilled in the U. S. is being published by Magnus, Mabee & Reynard, Inc., and is soon to come off the press.

Copies of the book entitled "Essential Oils and Kindred Products Grown and Distilled in the U. S. A." may be obtained by writing to the company at 16 Desbrosses St., N. Y. City or to the company's Chicago offices, 221 N. La Salle St.

Vanadium Discussed

What vanadium means to the steel industry is the principal theme of the August number of Priorities, house magazine of Prior Chemical Corp.

Westinghouse Fellowship

In 1939 the Westinghouse Electric & Manufacturing Co. founded at Mellon Institute an Industrial Fellowship to conduct investigational work on plastics, especially synthetic resins, for constructional purposes. Since then the Fellowship staff has been carrying on research on new raw materials, new molded products, and new processing methods, evaluating them for commercial application. In these activities particular emphasis has been placed on the employment of plastics in those fields where the uses of resinous materials are unknown, limited, or undeveloped.

Following the completion of this basic research program two specialists, H. Ross Strohecker and William B. Johnston, will conduct the subsequent investigational and developmental work of the Fellowship. Mr. Strohecker will give attention to the physical technology involved and Mr. Johnston will perfect the chemical processing included in the comprehensive project. These plasticians will have the direct and constant cooperation of experts in the Westinghouse organization.

Dow Insurance Plan

Extension of its five-way group protection program by the Dow Chemical Co., manufacturing chemists of Midland, Mich., provides its employees at the new

chemical warfare plant with the same scale of life insurance, sickness, and accident, and hospitalization and surgical expense benefits already in force for employees of its other plants. Details of the extended program have been announced by Willard H. Dow, president of the company.

The group plan is being underwritten by the Metropolitan Life Insurance Company on a cooperative basis whereby the employees contribute fixed amounts and the employer bears the balance of the entire net cost.

ASSOCIATIONS

BIMS Golf Tourney

Seventy-five members of the BIMS of New York plus a few hardy guests took part in the July golf tournament of the organization at the Plandome Golf Club, Plandome, L. I., July 28.

Richard R. Powell of Plexo Preparations was winner of the first prize, closely followed by Ed A. Bush of Bush Pan-America.

Other prize winners included Paul Miller, of International Cellucotton, David J. Stewart, Jr. of Yardley, James McInnes of Commercial Solvents, O. Dexter Neal of Hilton-Davis Chemical, Ross A. White of E. N. Rowell, John Rau of F. N. Burt Co., Joseph V. Gartlan of Majestic Metals Specialties, Walter B. Smith of Affiliated Products, F. H. Sloan of Naugatuck Aromatics, William E. Terry of American Coating Mills, Walter L. Fretz of Dodge & Olcott, Sewell H. Corkran of E. N. Rowell, A. M. Dinkler, Carl C. Roth of Arrow Engraving, and Frank A. Nicholson of Richardson, Taylor Globe.

Changes Convention

American Petroleum Institute's Twenty-third Annual Meeting will be held at Chicago on the dates originally scheduled, November 9 to 13, but at the Palmer House instead of the Stevens Hotel which recently was requisitioned by the government for the Army Air Corps.

Shuey Speaks on Plastics

Dr. R. C. Shuey, Bakelite Corp., presented a film on "Plastics in Modern Industry" and a talk on Bakelite for plastic use at the June 29 meeting of the Golden Gate Paint & Varnish Production Club.

Distribution Meeting

Fourteenth Annual Boston Conference on Distribution, with an array of notable speakers, will be held on October 5 and 6 at Hotel Statler, Boston.

Cancel Convention

In view of the transportation shortage and the request made by the Director of Transportation to cancel all conventions, etc., where possible, the Executive committee of the National Paint, Varnish & Lacquer Association at its meeting held in Chicago July 10, unanimously voted to cancel arrangements for the annual convention originally announced to be held in Atlantic City the latter part of October.

ADCIM Golf

Associated Drug & Chemical Industries of Missouri, Inc., held a golf tournament at the Algonquin Country Club July 13. The following were winners:

Sid LeGear, LeGear Medicine Co.; Bill VanAlystyn, Merck & Co.; Bob Richardson, Radio Station KWK; Morris Hoops, Merck & Co.; Ray Caulk, Monsanto Chemical Co.; Frank Barada, Fritzsche Bros., Inc.; Jim Montgomery, U.S.I. Co.; Geo. Irwin, Puro Co.

Next tournament will be held at Glen Echo Country Club, August 11th.

Get Dudley Medal

For their technical paper presented at the 1941 Annual Meeting of the American Society for Testing Materials describing in detail extensive studies on the measurement of water vapor and gases, F. C. Todd, Assistant Professor, Petroleum and Natural Gas Engineering, and A. W. Gauger, Director, Mineral Industries Research, both men from Pennsylvania State College, received the Charles B. Dudley Medal at the A.S.T.M. Annual Meeting in Atlantic City June 24.

This award commemorates the name of the Society's first president, a pioneering materials technologist, and is in recognition of that technical paper which is of outstanding merit and constitutes an original research contribution. The paper describes the authors' extended work in developing a precise laboratory method and a field method for estimating moisture in fuel gases. The investigation involved the building of special equipment and carrying out of numerous research investigations.

GENERAL

NOPCO Buys Rare Company

The Office of Alien Property Custodian announced August 5 approval of a sale of Rare Chemicals, Inc., of Flemington, N. J., seized May 26, to National Oil Products Co. of Harrison, N. J.

The agreement calls for a sale price of $125,000 plus a 50-50 split of profit above 6 per cent return on the capital investment for the next ten years between the purchasers and the Alien Property Custodian.

National Oil Products Co. is a foremost producer of oil soluble and synthetic vitamins, also manufactures various chemical products for textiles, leather, paper, lubricant, metal and plastics industries. It recently acquired a large Boston fish liver extraction plant, an acquisition which is expected to further expand its vitamin oil capacity.

Leases Laboratory

General Aniline & Film Corp. has leased a four-story building in S. Easton, Pa., which will be remodeled for use as a central research laboratory.

A number of General Aniline's research men working in the chemical field will be transferred from operating plants of the company to the new laboratory. Their number will be augmented by other chemists.

General Aniline & Film operates dye-making plants at Grasselli, N. J., and Rensselaer, N. Y., and manufactures photographic apparatus and supplies at Binghamton and Johsnon City, N. Y.

Due to its pre-war affiliation with I. G. Farben, the German dye trust, control of the corporation is now vested in Leo T. Crowley, Alien Property Custodian.

Engineering Library

A national Engineering School Libraries Section has been organized as the seventh division of the Association of College and Reference Libraries to help meet war-time needs for the latest technical information.

First project of the section is a compilation of a check list of more than 500 copies of scientific periodicals received from Axis-occupied countries since the outbreak of war.

Gas Research Grant

A grant of $15,000 to enlarge the scope of research in gas warfare and explosive technology has been made by the Buhl Foundation to the Carnegie Institute of Technology. This work is being carried on by Dr. Ernst Berl, chief chemist for Austria-Hungary's War Ministry in the first World War.

S. A. Mining Congress

The Chilean government will sponsor

the first Pan-American Congress of Mines and Geology at Santiago, December, 1942. Invitations will be sent to mining societies of the other 20 American Republics.

Students Shift Courses

An unexpected shift of entering students from chemical to electrical engineering is reported by Professor Walter S. Watson, Director of Admissions at Cooper Union.

Professor Watson attributes it to a feeling among the students that reduced production for civilian use will narrow opportunity in this field. The sharp increase in the demand for electrical specialists both in the armed services and in civilian capacities accounts for the trend in this direction, he explains.

Cancel Conference

The Illinois Mineral Industries Conference, which was scheduled for Urbana, Illinois, October 30 and 31, 1942, under the joint sponsorship of the Illinois Mineral Industries Committee, the Engineering Experiment Station of the University of Illinois, and the State Geological Survey has been cancelled.

The sponsors have agreed to lend their combined support to the Regional Conference of the American Institute of Mining and Metallurgical Engineers, to be held in St. Louis, on October 1 and 2.

The war situation and the need for coordination of all industrial and research effort make it desirable to concentrate time and effort on the one meeting.

Plastics for Army

Plastics are being substituted for critical metals in army combat equipment, Lieutenant E. T. McBride of the Office of Chief of Ordnance says in a report to the Division of Paint, Varnish, and Plastics Chemistry of the American Chemical Society.

Satisfactory results have been obtained in utilizing special phenolic molding compounds for the Browning automatic rifle stock, Lieutenant McBride reports. However, investigations of the Small Arms Division of the Ordnance Department have shown that plastics have not reached the state where they can take the place of black walnut generally.

Potash Symposium

Outstanding agricultural authorities of the United States and the Hawaiian Islands will address a symposium on "Potash," vitally important plant food, at the 104th national meeting of the American Chemical Society to be held in Buffalo, Sept. 7 to 11, it is announced by Dr. H. B. Siems of Swift & Company, Chicago, chairman of the Society's Division of Fertilizer Chemistry.

Recognized as a war industry, potash, once dependent on foreign sources, is keeping pace with the war effort and is expanding month by month to supply American agricultural and chemical industries, the announcement says. Production goals looking toward a vast food program, more vegetable oils, more nitrogen, and more potash chemicals are being met, it is reported.

Dr. G. R. Mansfield of the United States Geological Survey will open the symposium with a discussion of American potash deposits and reserves. Great reserves of unrefined run-of-mine salts, readily available, will more than equal any deficit in the refined salts that may develop, it is pointed out.

The wartime contribution of the American potash industry will be described by Dr. John W. Turrentine of Washington, D. C., president of the American Potash Institute, who has been appointed chairman of the symposium.

Twelve other scientific papers to be presented at the symposium, which is sponsored by the Fertilizer Division, will deal with soil reactions and trace potassium through its many chemical and biological functions from the soil solution to the harvested crop.

21 Firms Arraigned

Federal Judge Thomas W. Slick has set Oct. 5 for the arraignment of 21 chemical corporations and 65 individuals indicted in June on charges of impeding the war effort through price fixing and monopoly. Bond for each of the 65 individuals indicted was set at $1,000.

Combines Divisions

The functions of the sales promotion division of Commercial Solvents Corporation have been combined with those of the trade relations division into a new department—the technical service division. This new division will handle all promotional activities of Commercial Solvents, including advertising, market development and sales promotion. Charles D. Goodale has been appointed Manager of the Technical Service Division with offices at Terre Haute, Ind.

Exposition Switched

Second National Chemical Exposition of the Chicago section of the American Chemical Society will be held at the Sherman Hotel in Chicago instead of the Stevens and will take place from Nov. 24 to 29 instead of a week earlier as originally planned.

The change in location and date came about when the U. S. Army took over the Stevens Hotel last month.

"Adequate space will be available for a show about twice as large as the first exposition sponsored by the Chicago Section in 1940 and under most advantageous conditions," said Victor Conquest, chairman of the show committee.

"Our preliminary survey indicates that we can accommodate more than 100 exhibitors. Just how many in excess of that number we can take care of is a question at this time. Our original plan provided spaces for 145 exhibitors. It is important, therefore, that all who plan to exhibit in this important war-time show file application for space at once."

No changes are planned in the original program for the big show, it is announced. There will be daily conferences to be addressed by leaders in the chemical industry, educators and other outstanding authorities. The committee is arranging for an interesting display of motion pictures. Adequate accommodations will be available in the Sherman Hotel for the thousands of visitors expected from all over the country.

Mr. Conquest points out that the importance of the show cannot be underestimated. The chemical industry is vital in the war effort. Many new processes and discoveries will be revealed. The exposition will offer the opportunity to exchange ideas and to view latest developments in an industry which has contracts for construction projects totaling $72,118,000 this year as compared with $46,996,000 a year ago.

Salvage Group Formed

An American Industries Salvage Committee, representing groups of leading industrial concerns who are working with the Conservation Division of the War Production Board was formed recently to help speed the collection of vital scrap materials.

The work of the committee, backing up a broad advertising program, will be twofold: one, to reach every manufacturing and business firm in the nation to impress upon them the absolute necessity of getting their scrap on the way to the production line; and, two, to get business men cooperating with the local salvage committees of WPB already set up in 12,000 communities.

Engineers on Radio

The A.I.Ch.E. is co-operating with the A.S.C.E., the A.S.M.E., the A.I.E.E. and

A.I.M.E., at the request of the National Broadcasting Company, in the preparation and presentation of a series of radio programs entitled "The Engineer at War."

These programs started July 16th, 6:30 to 6:45 P. M. over the NBC Network. Rest of the program is as follows:

Aug. 13. DRY DOCKS AND SHIP REPAIR BASES. Rear Admiral Ben Morell.

Aug. 20. TANKS AND TOOLS, prepared by Chrysler Corporation.

Aug. 27. AIRPLANES, prepared by Wright Aeronautical Corporation.

Sept. 3. PETROLEUM, prepared by Robert E. Wilson, President, Pan American Petroleum & Transport Company.

Sept. 10. POWER, HYDRO-, STEAM-ELECTRIC. Glen B. Warren, General Elec. Co. and others.

Sept. 17. U. S. ENGINEERS CORPS IN PEACE AND WAR.

Sept. 24. COMMUNICATIONS IN ACTION.

Plastics Forums

Plastics Industries Technical Institute, Los Angeles, Calif., is planning to conduct study forums in such industrial centers as Chicago, Detroit, Cleveland, Milwaukee, Newark, Philadelphia, St. Louis, Oakland, Calif., and Burbank, Calif. Purpose of the forums is to provide anyone interested in plastics with an opportunity to learn about the different types of plastic materials and to understand the methods of converting them into industrial production.

Further details regarding the day and evening schedules may be had by writing the Institute's executive offices at 122 E. 42d St., N. Y. City, 221 No. La Salle St., Chicago, or 186 S. Alvarado St., Los Angeles.

D & R Aids Morale

With a view to facilitating reemployment after the war and of easing the problem of readjustment, Devoe & Raynolds Co. has instituted a rule that department heads must carry on regular correspondence with employees who have entered war service.

W. H. Mathews, company president, has suggested that if every employer of a service man made it a point to keep the latter informed on the business and the activities of his associates the soldier or sailor would feel a corresponding heightening of his morale. "And morale," he declared, "is essential to winning the war as well as the peace."

One hundred and fifty members of the Devoe & Raynolds organization are now in the service of their country.

New Tank Construction

What is believed to be the first tank car in which the tank is constructed entirely of welded stainless-clad steel, has just been completed by General American Transportation Corp., Sharon, Pa. The tank required 15,000 lbs. of "Silver-Ply" stainless-clad steel, supplied by the Jessop Steel Co.

"Treasury of Science"

"The Treasury of Science," a new series of low-priced, pocket-sized books designed to deal authoritatively with varied aspects of modern scientific knowledge is soon to be offered by L. B. Fischer Publishing Corp., N. Y. City.

Correspondence on manuscripts is invited by the company.

Buys Warehouse

Colgate-Palmolive-Peet Co., Jersey City, purchased recently from the American Sugar Refining Co. its former refining plant and warehouse in Jersey City to be used for warehouse purposes.

Buys Plant

National Oil Products Co., Harrison, N. J., recently acquired the fish liver reduction plant at Boston formerly owned by Rowland Marine Products Co.

Chinese Make Medicines

In one of the latest "China Defense League Newsletters," published by the central committee of the China Defense League, to come out of Hong Kong, there is an interesting story on making medicines in Northwest China—a report on the North Shensi Medical factory.

The story was brought to the attention of C. I. by the China Aid Council of the United China Relief which sends funds and materials to the hospitals and training schools in the Northwest guerilla areas of China.

The Japanese blockade, the story points out, and the cut-off by reactionary provincial authorities on three sides has caused the Eighth Route Army in the "Shensi-Kansu-Ninghsia Border Region" to struggle for existence under the slogan of self-sufficiency. The setting up of the Northwest Medical Factory was a bold attempt toward a solution of the medical needs.

The factory is safe from air raids and plentifully provided with fuel and water. The medical factory has more than 200 workers divided into three production departments and a chemical laboratory. Both Chinese and Western medicines are prepared.

As a whole, the factory is run under the direction of the Army Medical Service Department. Direct management is in the hands of a number of pharmacologists trained in Chinese universities and one returned student from Japan. Of the 200 workers, one quarter are regularly instructed in science and the remaining workers are drawn from local peasantry.

PERSONNEL

Gabriel to Publicker

Charles L. Gabriel has resigned as manager of the sales promotion division of Commercial Solvents Corp. after an association of 22 years with the company and has joined the Publicker Commercial Alcohol Co., Philadelphia. Mr. Gabriel will make use "in an executive capacity" of all his training and experience in the development, production and distribution of chemicals. Initially, he will concentrate on the new developments.

Macdonald Appointed

Robert D. Macdonald has been named a research engineer on the technical staff of Battelle Memorial Institute, Columbus, Ohio, where he has been assigned to the materials beneficiation division.

In Controllers Institute

Meyer Feinberg, assistant controller of Commercial Solvents Corp. and Donald F. Walker, secretary and assistant treasurer of the Hilton-Davis Chemical Co., have been elected to active membership in the Controllers Institute of America.

Ambler Appointed

J. B. Ambler has been made district representative of Pittsburgh Lectrodryer Corp. in the middlewest, with offices at 602 Denver National Building, Denver, Col.

Williams Changes

Dr. E. C. Williams, vice president and director of research of General Mills, Inc., has relinquished his position to join the board of the General Aniline & Film Corp. He will direct the research activities of the company.

WASHINGTON

(*Continued from page 244*)

Regulations No. 1, applying to bar or package soaps or cleaners, has frozen the types of soap now being sold in different parts of the country as "minimum standards" for soap manufacturers.

Storekeepers, wholesalers and manufacturers who had abnormally low prices throughout March as a result of special merchandising deals or temporary price reductions were given relief by OPA in Amendment No. 14 to GMPR.

Other actions in the chemical field include;

A regulation establishing lower pulpwood prices forecast by OPA;

Amendment No. 9 to Order M-15-b-1, by WPB establishes further rubber conservation in many industrial activities; including rubber-lined tanks, drums, etc.;

An informal advisory committee for the Vitamin A industry set up by OPA to consider price actions;

General Preference Order M-12 amended, tonchannel delivery of cotton linters and hull fibers for making chemical cotton pulp for explosives, to designated makers, by WPB;

WPB action placing Canadian companies on the same basis as American concerns so far as classification by WPB of the end uses of their products is involved;

Further WPB restrictions on use of blackplate for cans, except to certain essential products, mostly chemicals or paint preparations; Conservation Order M-136;

Authorization of cellophane for window cartons in packaging food products; through amendment to L-20;

Postponement of operations by thermoplastic manufacturers under Order M-154 to August 15, to permit change-overs conforming to the order, under WPB;

Easing of inventory restrictions of Priorities Regulation No. 1, on anti-freeze from alcohol, in Amendment No. 1 to Order L-51 by WPB;

Action by WPB Beverage and Tobacco Branch to promote increased production of tartrates from the domestic wine industry.

Announcement by the Department of Agriculture of a short and economical process of making butylene glycol, at Peoria, Ill., through fermentation of grain; corn and wheat.

Removal of restrictions on transactions in Agar, in Order M-96, so far as sales to Defense Supplies Corporation are involved.

Packaging and Container Forum

(*Continued from page 232*)

containers are specified on the license.

(c) Except as set forth in paragraph (a) above, an individual license is required for metal drums and containers exceeding 10 gallons in capacity regardless of the fact that the exportation of the contents is authorized under general license.

3. Filled or unfilled metal cylinders designed to hold gases, regardless of capacity, will be authorized for exportation under general license to the following destinations only: Canada, Great Britain and Northern Ireland, Newfoundland, Greenland, Iceland, and the U. S. S. R. Exportations of metal gas cylinders filled or unfilled regardless of size or capacity will require individual licenses for export to other destinations.

4. Metal drums, containers, and cylinders, irrespective of capacity, when filled with articles and materials requiring an individual export license, must be listed and described on the license application covering their contents.

5. The foregoing provisions apply to all shipments of metal drums and containers and gas cylinders, including those in individual shipments valued at $25.00 or less.

6. The unlimited licenses issued to the British Purchasing Commission, the Netherlands Purchasing Commission, the Universal Trading Corporation, and the Belgian Congo Purchasing Commission, authorizing the exportation of metal drums, regardless of capacity are not affected by the provisions of this instruction.

7. The unlimited licenses held by certain American oil refining companies authorizing exportations of metal drums and containers in unlimited quantities to the other American republics are revoked effective July 15, 1942. Holders of these unlimited licenses will thenceforth be subject to the above provisions.

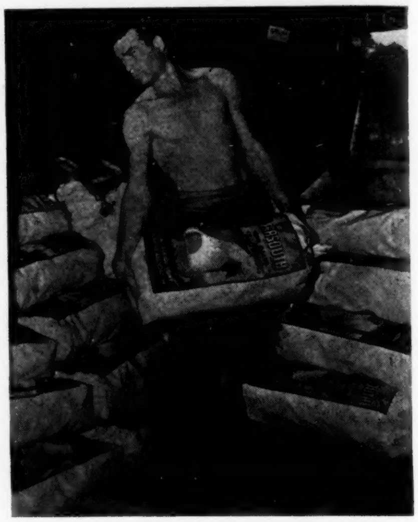
Potatoes in Multiwall Bags

Potatoes are the only perishable commodity in the United States which are not generally processed to improve appearance.

Tropical Agriculture Cooperative Association, of Goulds, Florida, began work on the problem; finally evolved a unique method of processing and marketing. The potatoes were first washed, but since damp potatoes rot easily, further steps were necessary to completely dry the washed potatoes, remove all moisture.

Problem No. 2 was to obtain an efficient, economical drying machine. The method was new: manufacturers of standard processing equipment had nothing to offer that would remove sufficient moisture. Tropical experimented, found the answer, built its own drying units. Two of these units will wash and dry an average of one carload of potatoes in one hour.

Since Tropical introduced the method, some ten years ago, hundreds of carloads



Loading Potatoes in a refrigerator car. Sides of the car are lined with paper and the floor is covered with a heavy bedding of straw.

of processed potatoes have reached shipping points all over the country—with not a single "decay in transit" claim. So effective is the process that Lloyd's of

A weighted crate of 51-lbs. of potatoes is dumped through a padded bin into Union Multiwall paper shipping containers.

London have underwritten a policy unparalleled in the shipping history of perishable commodities. It insures the arrival of all Tropical-processed potatoes in original shipping condition.

Shortly over a year ago, Tropical turned its attention to a new problem. To find a practical, efficient, economical method of shipping potatoes, several types of containers were tested and compared. Multiwall paper potato bags were adopted.

Tropical-processed potatoes are going to market in paper, protected by attractive, economical, 50-lb. Union Multiwall bags.

ESTABLISHED 1880

WM. S. GRAY & CO.

342 MADISON AVE. NEW YORK

Murray Hill 2-3100 Cable: Graylime

Acetic Acid—Acetate of Lime
Acetate of Soda
Acetone C. P.
Butyl Alcohol—Butyl Acetate
Methanol—Methyl Acetone
Methyl Acetate
Formaldehyde
Denatured Alcohol
Turpentine
Rosin
Benzol
Toluol
Xylol
Whiting
Magnesium Carbonate
Magnesium Oxide
Precipitated Chalk

Anti-Freeze—Methanol and Alcohol

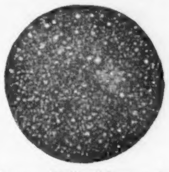
Available for Immediate Shipment

Laboratory-Size

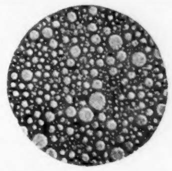
HOMOGENIZER!

. . . Ideal for Experimental Batches

$6.50
Complete!



Above—with Hand Homogenizer
Below—with mortar and pestle



New laboratory convenience, new speed in making test samples or experimental batches! Uses as little as 1 oz. of material. Homogenizes instantly—each stroke of hand-lever ejects a jet of completely emulsified liquid. No emulsion-failures, provided the ingredient ratio is sound—permanent suspension always. In photos at left, note fine degree of dispersion secured (above) compared with coarseness of same mixture emulsified with mortar and pestle (below).

Hundreds of laboratories save time and materials by using this simple, practical Hand Homogenizer, for batches up to 10 oz. Portable, easy to operate and clean, strongly built of molded aluminum, with stainless steel piston. 10½ in. high, 12 oz. bow. Only $6.50 complete—order direct or from your laboratory supply house (satisfaction guaranteed)—or write for further details.

International Emulsifiers, Inc.
Dept. 101. 2409 Surrey Court, Chicago, Ill.

International
HAND HOMOGENIZER

Church & Dwight Co., Inc.

Established 1846

70 PINE STREET NEW YORK

Bicarbonate of Soda

Sal Soda

Monohydrate of Soda

Standard Quality

Elwell-Parker Elects

Newly elected officers of the Elwell-Parker Electric Co., Cleveland, are: **S. K. Towson,** president and general manager; **W. A. Meddick,** vice president.

New Appointment

Dr. Westbrook Steele, executive director of the Institute of Paper Chemistry, recently announced the appointment of **Dr. J. Edward Todd** as assistant to the dean, **Harry F. Lewis,** as of July 1, 1942.

Parlett With HVWM

The Hanson-Van Winkle-Munning Co. manufacturers of electroplating equipment and supplies, Matawan, N. J., announce the appointment of **Benjamin F. Parlett, Jr.,** to the sales force of the company.

Stephens With Battelle

Frank M. Stephens, Jr., has been named a research engineer on the technical staff of Battelle Memorial Institute Columbus, O., and has been assigned to the materials beneficiation division.

Berle Now Colonel

Lieut. Col. Charles H. Berle, who was granted a leave of absence from Innis Speiden to go on active duty, has been promoted in rank to full Colonel.

Elder Appointed

Dr. Lucius W. Elder has been appointed director of the physical chemistry section at the Central Research Laboratories of General Foods Corp.

Hungerford Resigns

Dan C. Hungerford has resigned as vice president and director of the Elastic Stop Nut Corp., Union, N. J.

Silver Elected

Elmer W. Silver has been elected treasurer of International Nickel, succeeding the late **William L. Rianhard,** who died on July 24.

New Westvaco Men

Westvaco Chlorine Products Corp., New York City, added the following men to its research and development department in June:

Frank P. Byrne—M. S. in chemistry from Creighton University in 1938. Prior to coming to Westvaco, he held a position on the teaching staff of St. Joseph College, Hartford, Connecticut. **Richard W. Cummins**—B. S. in chemistry from University of Michigan, 1942. **Bradford C. Hafford**—Ph. D. in chemistry from University of Wisconsin, 1942. **Ward M. Hanson**—B. S. in chemical engineering from University of Minnesota, 1942. **John M. Lenoir**—B. S. in chemical engineering from University of Illinois, 1942. **Edwin P. Plueddemann**—Ph. D. in organic chemistry from Ohio State University, 1942. **William G. Strunk**—B. S. in chemistry from University of South Dakota, 1942. **Robert M. Thomas**—Ph. D. in chemistry from Purdue University, 1942. **Dean D. Watt**—B. S. in chemistry from University of Idaho, 1942.

Scaife Elected

Alan M. Scaife, member of the board of directors and finance committee of Gulf Oil Corp. has been elected vice-president of the company.

New Appointments

J. P. Margeson, Jr. and **Franklin Farley** were recently elected vice-presidents of International Minerals & Chemical Corp. **Herbert C. Brewer,** for many years vice-president and director of the Chilean Nitrate Educational Bureau has been made vice-president and director of the Iodine Educational Bureau, Inc. **Eugenio Vidal** also has been appointed a vice-president of the latter association. **Oscar W. Tuckwood,** traffic manager for the past seven years, has been named a vice-president of the Chilean Nitrate Sales Corp.

Atwater Retires

C. G. Atwater, long a prominent figure in the fertilizer industry, retired last month from the Barrett Division, Allied Chemical & Dye Corp.

Lockwood Recuperates

Joseph E. Lockwood, veteran naval stores consultant and an authority on naval stores statistics, is resting at his home in Savannah, Ga., after a visit to the Mayo Brothers Clinic, Rochester, Minn., where he underwent an operation.

OBITUARIES

Henry G. Knight

Dr. Henry Granger Knight, Chief of the Bureau of Agricultural Chemistry and Engineering in the U. S. Department of Agriculture, died July 13, after a short illness in Emergency Hospital, at the age of 64.

Secretary of Agriculture Wickard said of Dr. Knight: "He has been an important factor in the development of scientific agriculture and the relationship between farming and industry. His loss is particularly heavy at this time when the country is using its every resource to win the war. However, we are fortunate in having the modern research organization he did so much to build."

Richard Willstaetter

Professor Richard Willstaetter, 1915 Nobel Chemistry Prize winner for his research in chlorophyl and other vegetal colorants, died in Locarno, Switzerland, August 3 at the age of 70. Death resulted from a cardiac condition. Dr. Willstaetter was known as the "Einstein of chemistry."

Frank S. Dunham

Frank S. Dunham, associated with the Permutit Co in Chicago for approximately 25 years, died July 23 at the age of 66.

Carl F. Dahlberg

Carl F. Dahlberg, vice-president of the South Shore Oil and Development Co. in Louisiana and a founder of the Celotex Corp. died at Atlanta July 26 while on his way to New York. He was 63.

Clarence A. Hall

Clarence A. Hall, 68, chairman of the board of Bartol Research Foundation, assistant treasurer of Franklin Institute and a chemical engineer associated with Electric Storage Battery Co. died at his home in Philadephia July 20 after a heart attack.

ADVERTISEMENT—*This entire page is a paid advertisement.* *Prepared Monthly by U. S. Industrial Chemicals, Inc.*

U.S.I. CHEMICAL NEWS

August ★ A Monthly Series for Chemists and Executives of the Solvents and Chemical Consuming Industries ★ 1942

New U.S.I. Product Now Available for Experimental Work

Ethyl Sodium Acetone-Oxalate Displays Interesting Reactions

Ethyl sodium acetone-oxalate is now available from U.S.I. in small quantities for experimental investigation of the potentiality of this interesting and reactive chemical.

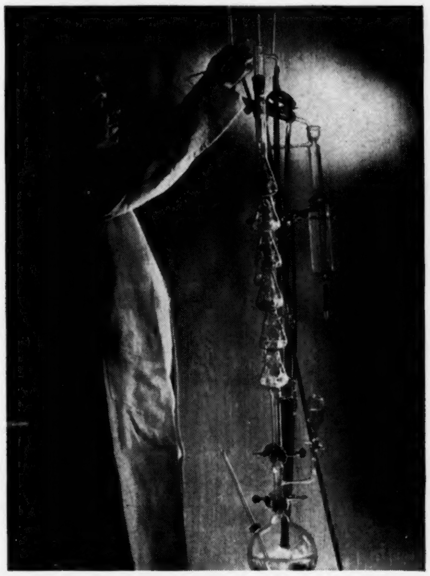
Compound has the formula:

$$CH_3COCH{=}C(ONa)COOC_2H_5$$

Among the known applications of ethyl sodium acetone-oxalate, it may be readily condensed to symmetrical hydroxytoluic acid, $C_6H_3COOH(1)OH(3)CH_3(5)$.

Another of its possible reactions is with phenylhydrazine to give phenylpyrazolecarboxylic ester.

U.S.I. invites inquiries on this unusual chemical, which can be produced commercially if demand develops.



This glass model of a distillation column is used in U.S.I.'s laboratories to aid in studying processes that take place in an actual production unit.

Quinine May Be Omitted From N.F. Preparations

WASHINGTON, D. C.—In order to conserve quinine stocks, the National Formulary has issued an interim revision, permitting manufacturers and pharmacists to omit quinine from certain preparations. To replace Elixir Iron Quinine and Strychnine Phosphates, two new formulas have been issued for Elixir Iron and Strychnine and Elixir Iron and Strychnine Phosphates.

U.S.I.'s Chicago Office Moves to New Quarters

The Chicago Sales Office of U.S.I. is now located in new and more convenient quarters at 624 South Michigan Avenue.

Carbon Dioxide Safeguards Planes, Ships, and Plants

Liquid Form Extensively Used to Prevent and Extinguish Fires And as a Means of Inflating Life Belts, Jackets, and Rafts

Carbon dioxide, widely familiar as a means of supplying sparkle and palatability of carbonated beverages, and in its solid form as a highly efficient refrigerant, is finding constantly increasing utility in safeguarding the production and operation of war equipment, particularly airplanes and ships, where its properties are especially valuable in the prevention or extinguishing of fires.

Carbon dioxide is readily recovered as a by-product of alcohol manufacture, and after cleansing and purifying, it is liquefied by compressing and cooling, after which it is filled into cylinders or made into the solid form ("DRY-ICE").

Carbon dioxide as a liquid can exist only under pressure. When the pressure is released, it boils off rapidly into the gaseous form and snow, the snow being formed by self-refrigeration from the expanding gas.

Use in Fire-Fighting

Fires, particularly those of paint, lacquer, grease, oil, gasoline, alcohol, or electrical origin, are most effectively put out with carbon dioxide. The liquid carbon dioxide is discharged from a siphon cylinder through a flexible hose and nozzle directly on the fire. The gas acts as a blanket between the fire and the surrounding air, and the fire is smothered by lack of oxygen. In addition, the carbonic snow and extremely cold gas cool the fire below the ignition point.

Airplane engines are protected in this way by carbon dioxide systems. Carbon dioxide released in the engine housing immediately extinguishes any fires resulting from leaky oil or gasoline lines. Planes on the ground can also be protected against fire in this way. Crash trucks equipped with a battery of cylinders can discharge sufficient carbon dioxide to envelop an entire burning plane.

Gasoline tanks are protected against fire or explosion on combat planes by flooding the space above the gasoline with carbon dioxide,

(Continued on next page)

U.S.I. Consolidates Its Two News Advertisements

Effective with this issue, U.S.I.'s two monthly news-type advertisements, U.S.I. CHEMICAL NEWS and U.S.I. ALCOHOL NEWS, will be combined into a single advertisement, which will be known as U.S.I. CHEMICAL NEWS. This advertisement will be printed on the characteristic blue stock already familiar to readers of U.S.I. CHEMICAL NEWS, and will appear in all publications in which either of the advertisements has appeared in the past.

This step has been taken in recognition of the growing interrelationship among the various phases of the chemical and chemical-consuming industries. It is hoped that the combined advertisement will provide more effective news coverage of these industries, together with the proper balance among the interests of its readers.

Inquiries Invited on Many Synthetic Organic Chemicals

Inquiries are invited by a chemical manufacturer relative to the production of synthetic organic chemicals, such as the halides, ethers, esters, acetals, etc., of the following hydroxy compounds: glycerine, trimethylene glycol, allyl alcohol, ethanol, and other common alcohols; as well as derivatives of acetylene, ethylene, and propylene.

U.S.I. will gladly refer inquiries on these chemicals to the manufacturer.

(Left) In solid form ("DRY-ICE") carbon dioxide is extensively used for refrigeration purposes. (Right) Liquid carbon dioxide is employed to good advantage in extinguishing fires, particularly in cases where water cannot be successfully employed.

ADVERTISEMENT—*This entire page is a paid advertisement.*

August ★ **U.S.I. CHEMICAL NEWS** ★ 1942

Acetone Used as Solvent In Process for Molding Of Colloidal Materials

PARIS, France — Cellulose ethers, synthetic resins, and other colloidal materials can be molded inexpensively by a new process involving the use of acetone, it is claimed in a patent granted to two inventors here.

In general, the procedure consists in preparing a mixture consisting of two phases: a more or less viscous solution of the colloidal material in a volatile solvent, such as acetone; and grains which are in a state of incipient dissolution by the solvent.

When such a mixture is poured into molds, the liquid part is said to turn quickly into a gel, as a result of the presence of the imperfectly dissolved grains, which absorb the solvent. The process is described as being especially adaptable to the molding of hollow objects, whether translucent, transparent, or opaque.

Drying is very even, according to the patent, and the finished objects closely reproduce the shape of the mold. Molds may be made of inexpensive materials, such as plaster, if desired.

Polymerized Alcohols Yield Pour Depressors

NEW YORK, N. Y.—Lower aliphatic alcohols can be polymerized by Friedel-Crafts catalysts to form effective pour depressors for waxy lubricating oils. The polymerization products are useful also for reducing the wax content of waxy oils.

This discovery has been made by two inventors here, who have received a patent on the polymerization products. Typical examples of alcohols which can be used include ethanol, butanol, and amyl alcohol.

Ethanol Protects Viscose Yarns During Mercerizing

The textile industry has found ethanol useful in protecting regenerated cellulose yarns, such as viscose, in combinations with cotton which is to be mercerized. The addition of one gallon of ethanol or SOLOX (U.S.I.'s ethanol-type solvent) to 100 gallons of the mercerizing caustic liquor has the effect of preserving the luster and tensile strength of the viscose, it is reported.

Casein Product Dilutable With Organic Solvents

BAINBRIDGE, N. Y. — A casein product in solution form can be diluted with organic solvents, such as ethanol, acetone, and ethylene glycol, without coagulating, it is announced by a manufacturer here. Because films of the material have good flexibility and resistance to water and grease, maker suggests its use as a shellac substitute, top coating, greaseproofing material, ink vehicle, wood sealer, impregnant, and similar applications.

Uses of Carbon Dioxide

(Continued from previous page)

thus forcing out the air normally present. The tanks thus protected cannot be set on fire even if struck by bullets.

Shipboard Uses

Carbon dioxide fire-fighting systems are installed on Navy vessels to protect electrical installations, engines, and inflammable materials. These systems usually operate automatically at a fixed maximum temperature and for a rapid rate of temperature rise. Fires in any shipboard area protected by carbon dioxide can be extinguished in a few seconds, as the released gas quickly reaches into every nook and corner.

Carbon dioxide systems are also used to good advantage in the prevention of fires in production plants, particularly where inflammable materials are involved.

Inflated Appliances

Appliances inflated with carbon dioxide have proved to be excellent life-saving devices at sea. Life belts, for example, can be quickly inflated when needed by pulling a small cord attached to the end of a lever arm, puncturing a small carbon dioxide bulb. Inflatable life-saving jackets operate on the same principle, which is also applied in rubber life rafts. These rafts can be rolled up to occupy little space, so that they can be conveniently stored on an airplane, for example. Rubber bags inflated with carbon dioxide are used to enable planes to float on the sea in case of an emergency landing.

A novel application for carbon dioxide is its use for bullet propulsion in practice guns. The bullet is forced out of the gun by the pressure of the carbon dioxide as it expands. This use in practice guns permits saving gunpowder for actual combat purposes.

Liquid and solid carbon dioxide is manufactured by U.S.I. and distributed by Pure Carbonic, Incorporated.

TECHNICAL DEVELOPMENTS

Further information on these items may be obtained by writing to U.S.I.

A stripping lacquer can be applied to the surface of metal or ceramics to protect finish and prevent scratches or grease marks, according to the manufacturer. Lacquer forms film that is almost completely transparent, permitting visual inspection of covered part. It can be readily peeled off and dissolved for re-use, it is claimed. **(No. 600)**

U S I

A soap antioxidant is now being produced from raw materials that are available in ample quantities, it has been announced. It is described as a light gray powder that does not affect soap color, odor, or other properties. It may be introduced in the form of an alcoholic solution. **(No. 601)**

U S I

A layout stain can be used on brass, copper, steel, aluminum, and other metals, contains no acids or corrosive ingredients, according to the manufacturer. Its use is said to relieve eye strain and assist the workman in following layout accurately. **(No. 602)**

U S I

A protective cream is said to be compounded especially to protect the skin from the action of arsenic, lead, and their compounds. When applied, it forms a thin, invisible film, which can be removed with soap and water. **(No. 603)**

U S I

A liquid glue is said to be free from objectionable odor, and to be useful for reinforcing weaker adhesives in the manufacture of coated or gummed paper, finishing textiles, shoe operations, and other applications. **(No. 604)**

U S I

Rapid filter media for viscous liquids, such as lacquers or varnishes, are formed directly from carded cotton web without weaving, by bonding the fibers onto a gauze backing. Filters are said to be low in cost, and are discarded after use. Used in front of filter paper, they greatly increase length of cycle, it is claimed. **(No. 605)**

U S I

A novel tinless container for creams, ointments, and pastes is said to permit exhausting of contents by turning top portion of tube. Tube is described as sufficiently firm to eliminate need for carton, and as adaptable to present tube-filling machinery. **(No. 606)**

U S I

A pure alkyd resin is designed specifically to meet the requirements of Holabird Quartermaster Depot Specification HQD-ES No. 680, it is reported. Resin is said to give the necessary balance among drying time, flexibility, resistance, and low final paint cost. **(No. 607)**

U S I

A new fluorophotometer is described as a complete self-contained model, especially designed to accelerate routine work in the determination of vitamins and minerals. It eliminates the amplifier and stabilizer incorporated in other models, and uses a simple electrical circuit. **(No. 608)**

U S I

A midget pump for handling hot liquids up to 500° F. is reported to have many industrial, pilot plant, and laboratory applications. Maximum pressure is 21 pounds per square inch, and maximum volume 7½ gallons per minute. Pump is powered by a 1/20 HP motor. **(No. 609)**

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Amyl Acetate
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OXALIC ESTERS
Dibutyl Oxalate
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PHTHALIC ESTERS
Diamyl Phthalate
Dibutyl Phthalate
Diethyl Phthalate

OTHER ESTERS
*Diatol
Diethyl Carbonate
Ethyl Chloroformate
Ethyl Formate

INTERMEDIATES
Acetoacetanilide
Acetoacet-ortho-anisidide
Acetoacet-ortho-chloranilide
Acetoacet-ortho-toluidide
Acetoacet-para-chloranilide
Ethyl Acetoacetate
Ethyl Benzoylacetate
Ethyl Sodium Oxalacetate

ETHERS
Ethyl Ether
Ethyl Ether Absolute—A.C.S.

OTHER PRODUCTS
Acetone
Collodions
*Curbay B-G
*Curbay Binders
*Curbay X (Powder)
Ethylene
Ethylene Glycol
Nitrocellulose Solutions
Potash, Agricultural
Urethan
*Vacatone

*Registered Trade Mark

Can you answer these questions?

1. **What important raw materials do we lack?**
2. **Is it possible for us to get them? Where?**
3. **What "civilian goods" will disappear from the market?**
4. **What substitutes are available for lost civilian goods?**
5. **What can the individual do to counteract shortages?**
6. **What do battles for far-flung territories mean to us?**
7. **What is the true rubber situation?**
8. **Will there be synthetic rubber tires for civilians? When?**
9. **Will civilian tires disappear for the duration?**
10. **What about tin? Canned goods?**
11. **How does petroleum affect the war?**
12. **What is our biggest weapon against the axis?**

STRATEGIC MATERIALS in
Hemisphere Defense . . .
What Do They Mean To You?

By M. S. Hessel, Walter J. Murphy and F. A. Hessel

The Contents of this important book cover facts you have been asking of commentators, newsmen, Congressmen. The real story behind

Steel, Heart and Life-Blood of Armaments

Rubber and Tin	Opium
Synthetic Rubber	Iodine
Aluminum	Cinchona
Asbestos	Cork
Mercury	Kapok
Antimony	Jute
Mica	Manila
Quartz	Sisal
Toluol	Fats
Textiles	Oils
Leather	Gums

The Supplies from South America

The Shortages in the Midst of Plenty—

Copper	Petroleum
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It tells without restraint the ungarnished facts you want to know. It explains in part how we have failed. It shows how we definitely can succeed. It is vital information—information you will want to have and USE!

Every American Wants The True Facts . . . . . Here They Are

EVERY one of us uses and depends upon supplies of essential materials. The war has brought home to Americans, for the first time, our ignorance and lack of preparation. While newspapers and periodicals tell us some of the facts, nowhere except in this book can you get the complete picture of the situation on ALL the strategic materials.

STRATEGIC MATERIALS IN HEMISPHERE DEFENSE makes crystal clear to every reader the complex story of supply. In it are discussed the fourteen strategic and fifteen critical materials on the Army's list, their sources, potential sources, their uses and our needs. Pictographic diagrams have been used to translate the figures into visual comparisons which will stick in your memory. Special emphasis is placed on consumer goods, and the effects on the home and average citizen.

The rise in war production from 150 millions of dollars to 3,500 millions between June 1940 and May 1942 is not enough for victory. Only by knowing the facts can we prepare. Here is a book which tells the true situation.

256 pages, 5⅜ x 8, *with many diagrammatic illustrations.* $2.50

As they have done with a similar problem in *Chemistry In Warfare*, the Hessels undertake to analyze and describe strategic materials for the average man, telling about the shortages, the available substitutes, effects on consumer goods and prices, and the effect of these vital supplies on the outcome of the war. They have collaborated with Walter J. Murphy, editor of *Chemical Industries*, to produce a volume which should be read by every wide-awake citizen who wishes to understand what the war is about, what sacrifices he must make, and wherein lies our strength. Visual diagrams make a complex subject crystal clear and contribute to a challenging and understandable analysis.

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Please send me ....copies of STRATEGIC MATERIALS IN HEMISPHERE DEFENSE by M. S. Hessel, Walter J. Murphy and F. A. Hessel, at $2.50 each.

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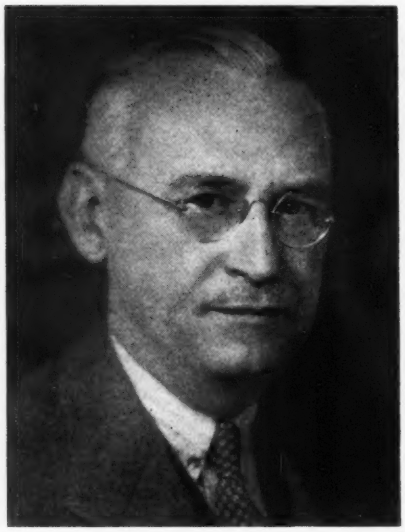
To Speak at Meeting of American Chemical Society in September



TO ADDRESS CHEMISTS

Dr. Charles M. A. Stine, vice president of E. I. du Pont de Nemours and Company who will deliver a public address at the 104th national meeting of the American Chemical Society to be held in Buffalo, N. Y., Sept. 7 to 11. Dr. Stine's theme will be "Molders of a Better Destiny."

TO DISCUSS SYNTHETIC RUBBER

Willard H. Dow, President of the Dow Chemical Company, who will address a symposium on synthetic rubber at the 104th meeting of the American Chemical Society at Buffalo, N. Y., on September 9.

TO DISCUSS COAL NEEDS

Orin W. Rees of the Illinois State Geological Survey, chairman of the Division of Gas and Fuel Chemistry of the American Chemical Society which will hold a symposium on "Uses of Coal by Various Industries" at Buffalo, N. Y., September 9 and 10. The role played by coal in making synthetic rubber and plastics will feature the sessions, at which scientists and industrialists will outline plans for the extended use of coal to meet wartime demands.

Interesting Sessions Planned for 104th ACS Meeting

A symposium on synthetic rubber will be held by the American Chemical Society at Buffalo, N. Y., on September 9 in connection with the Society's 104th meeting.

Dr. E. R. Weidlein, director of the Mellon Institute, and technical consultant on rubber of the Reconstruction Finance Corporation, will speak on "Progress of Synthetic Rubber Production." Albert L. Elder, of the Materials Division, War Production Board, will discuss "Progress of Butadiene Production." Willard H. Dow, president of the Dow Chemical Company, will outline "Progress of Styrene Production."

More than 4,000 scientists and industrialists will participate in the Society's sessions, lasting four days. Several hundred papers reporting advances in chemical science and industry will be presented.

"Uses of Coal by Various Industries" will be the theme of a symposium to be held by the Division of Gas and Fuel Chemistry of the American Chemical Society at Buffalo, N. Y., September 9 and 10, it is announced by Orin W. Rees of the Illinois State Geological Survey, chairman of the Division.

Authorities from industrial and research organizations will discuss the role played by coal in the making of synthetic rubber, plastics, cement and chemical intermediates; the use of coal in agriculture and in water purification; and the effect of storage and blending in the production of coke. Opportunities for the extended use of coal in meeting present urgent demands, and advances resulting from research as well as the need for continued investigation will be stressed, according to the announcement.

Dr. Harold J. Rose, senior industrial fellow of the Mellon Institute, Pittsburgh, will act as chairman of the symposium. A paper by Dr. R. L. Wakeman of the Mellon Institute and Dr. B. H. Weil of the Gulf Research and Development Company, Pittsburgh, will deal with coal as a source material for the rapidly expanding plastics industry.

Dr. Harry L. Fisher, formerly of the U. S. Rubber Company, and now director of organic research of U. S. Industrial Chemicals, Inc., Baltimore, will discuss synthetic rubber with particular reference to coal as an actual and potential source of raw materials. Dr. H. C. Howard of the Carnegie Institute of Technology, Pittsburgh, will outline possible new uses of coal by those industries which supply organic chemical intermediates for the manufacture of a wide variety of essential materials.

The close relationship of the coal processing industry to agriculture, and the agricultural uses of coal products for such purposes as disinfection, fumigation, and plant growth regulation, will be described in a paper by Dr. H. G. Guy, Koppers Company, Pittsburgh.

THE READER WRITES

(*Continued from page 156*)

for you to either inform us regarding formulation of these oils, or direct us to the proper bureau to secure this information. Your attention to our problem will be much appreciated.

Editorial Note: C I. will be glad to forward the name of this and other small chemical manufacturers who are anxious "to convert" but frankly are up the proverbial tree.

Levitt on Boiler Compounds

We are a subscriber to your magazine, in the May 1942 issue of which an article by Benjamin Levitt, on Boiler Compounds and Boiler Water Conditioning came to our attention.

This article interested us very much, since a part of our business covers this subject and we would like to send a copy of this article to our customers, a few of whom you will find listed on the back of our circular which we enclose for your attention.

Will you kindly let us know at your earliest convenience if we may have your permission to reprint this article for this purpose?

Incidentally, we'd like to take this opportunity to tell you that Chemical Industries has proven of great value and assistance to us in keeping up with the rapid changes taking place today.

R. D. Edwards, Secretary,
Dominion Chemical Company, Inc.,
New York, N. Y.

Resins and the War

RESINS are important in the War effort, therefore our research has been successfully directed towards the manufacture of S & W Resins that meet the specifications set up by the Government agencies. Where critical raw materials are involved, we are delivering resins against the proper preference ratings, and whenever possible are maintaining stocks in the large production centers throughout the country so that they are available to manufacturers without delay.

We anticipate having, as before, for use in the production of essential civilian finishes, limited quantities of certain resins that do not require critical raw materials.

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Chemicals for Industry

INDUSTRY'S BOOKSHELF

Elementary Physical Chemistry by Merle Randall and Leona Esther Young, Randall and Sons, Berkeley, Calif., 455 p., $4.50.

In preparing this new text the authors have directed it primarily to college students and to students of former years who are seeking to modernize their viewpoint. Emphasis has been placed upon modernized classical physical chemistry as a preparation for more advanced work in chemical thermodynamics, modern theoretical physical chemistry, quantum mechanics, atomic and molecular structure, photochemistry, etc. Applications of interest to the analyst, biologist, biochemist and geologist as well as those of interest to the inorganic, organic, physical chemist and chemical engineer are included.

The book contains 279 illustrations, each with its own descriptive paragraph for thorough understanding. The notation is that used by Lewis and Randall in their "Thermodynamic and the Free Energy of Chemical Substances." Relatively few equations are used and these are explained in simple language.

Modern Theories of Organic Chemistry, Second Edition, by H. B. Watson, Oxford University Press, London, 267 p., $5.00.

This work was first published in 1937. The progress of theoretical chemistry in the short space of three years has advanced so rapidly that the author has found it necessary to thoroughly revise the material for this second edition.

In this book an attempt is made to present the modern viewpoint in a concise and simple form and to show how the new conceptions have followed from the earlier ones. A brief and elementary account of the physical foundations of the subject is followed by the development of the main theme of the book, namely, the application of the electronic theory to the reactions of organic compounds, and by a description of some of the better known phenomena (such as addition and substitution reactions, tautomeric changes, molecular rearrangements, and the stability of free radicals) in terms of modern ideas. An account of some of the recent developments in stereochemistry is also included.

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This Chemical Age — **BD1**
By Williams Haynes — **$3.50**

"Mr. Haynes's book seems to be the fullest and most up-to-date popular account of its kind, and ought to be of genuine interest to the reader who knows just enough about chemistry to realize how little he really knows about the Miracle of Man-Made Materials."—Thompson in the N. Y. Times.—*A Knopf.*

Chemical Engineers Handbook — **BD2**
Edited by John H. Perry — **$10.00**

Over 3,000 pages of definitions, descriptions, principles, methods, and data on all phases of chemical engineering. 1,300 illustrations, 1,000 tables—thumb-tabbed and fully indexed, printed and bound for durability and great coverage in convenient size.

A 1942 tool for engineers—your constant aid in avoiding errors, saving time and trouble in procuring vital information, assuring yourself of best results in a wide variety of problems. McGraw-Hill Book Co., Inc.

Condensed Chemical Dictionary — **BD3**
Edited by Francis Turner — **$12.00**

This third edition of a popular reference work contains the names of approximately eighteen thousand chemicals and their synonyms, together with their chemical formulas; colors; properties; constants; specific gravities; melting points; boiling points; solubility in water, alcohol, ether and other solvents; their preparation and materials from which they are made, with a brief outline of the process; their grades, uses and the kinds of containers in which they are customarily shipped. It also defines the first hazards and the railroad shipping regulations pertaining to each chemical. New encyclopedic terms give information on a variety of raw materials, processing agents, military products, technical commercial terms, and important industrial processes. Another notable feature of this edition is the inclusion on effects of wartime on chemical prices. Reinhold Publishing Corp.

Industrial Instruments for Measurements and Control — **BD4**
By Thomas J. Rhodes — **$6.00**

This book supplies the information called for by the enormous increase in the number of instruments and controls used in industry, together with the increased complexity of the problems attending their design, installation, and maintenance. Of outstanding interest is the treatment of recording thermometers, high temperature pyrometry, optical and radiation pyrometry, and measurement of flow and fluids—containing the practical data necessary for the solution of flow problems without reference to any other source. McGraw-Hill Book Co., Inc.

Civil Defense — **BD5**
By C. W. Glover — **$16.50**

Over 900 pages, fully illustrated, revised and enlarged. So important has this subject become that this book is in its third revision in order to keep abreast of the most recent and successful methods in the science of protection. Chemical Publishing Co.

The Chemical Formulary — **BD6**
Edited by H. Bennett — **$6.00**

A collection of valuable, timely, practical commercial formulae and recipes for making thousands of products in many fields of industry. Contains chapters on Adhesives, Beverages, Cosmetics and Drugs, Emulsions and Dispersions, Farm and Garden Specialties, Foods, Inks, Leather, Skins, Furs, Lubricants, Oils, Fats, Materials of Construction, Metals and Metal Treatment, Paints, Enamels, Varnishes, Lacquers, Paper, Photography, Polishes, Pyrotechnics and Explosives, Rubber, Resins, Plastics, Waxes, Soaps, Cleaners, Textiles, Fibres, and Miscellaneous Products. Chemical Publishing Co.

Uses and Applications of Chemicals and Related Materials — **BD7**
Edited by Thomas C. Gregory — **$10.00**

This volume provides a quick and accurate shortcut to information about the uses and applications of over 5,100 important substances in more than fifty leading industries. In these days of rapidly expanding research, new products are constantly appearing and new uses are being developed for older materials. A great deal of this information is contained in this comprehensive 653 page book. Reinhold Publishing Corp.

Chemical Engineering for Production Supervision — **BD8**
By David E. Pierce — **$2.50**

The operating man who wants to analyze difficulties in operation, to check efficiencies, and to use his equipment to best advantage will find much problem-solving, time-saving, production-improving help in this practical guidebook. Throughout it stresses operation rather than design of equipment. McGraw-Hill Book Co., Inc.

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CANADIAN REVIEW

By Kenneth R. Wilson

OTTAWA—Having avoided formal priority systems for almost three years, Canadians are now pitchforked into the toils and meshes of the United States Production Requirements Plan.

On July 10, all purchasers of goods and commodities in Canada were placed on the Allocation Classification System and required to mark purchase orders or contracts with the identical "end use" symbols that appear on United States orders. Canada calls her end use code "Priorities Order No. 1." It is almost word for word the same as Priorities Regulation No. 10 issued by WPB. The United States symbols now apply to all Canadian business transactions (above the retail level) whether they involve U. S. materials or items of purely Canadian origin.

K. R. Wilson

This means that there will no longer be any Canadian designations even for orders placed in Canada by the Canadian armed services. All war business placed in Canada under the new system, whether requiring U. S. components or not, will henceforth be labeled with the U. S. end use code symbols, namely; USA, USN, LL, FP, etc. The manufacturer in Wisconsin, Winnipeg, New York or Montreal will not know whether he is handling materials or components for the U. S. Army or the Canadian Army. In fact, if the British government places orders in Canada other than with the central buying office (Canada's Department of Munitions and Supply) they will be stamped "FP" (Foreign Purchaser).

The advantage of this plan is that it removes the possibility of discrimination against orders placed in Canada which require metals, components, sub-assemblies or other materials from the United States. It is quite the most far-reaching step ever taken by the two countries to mesh production and resources, and means that Canadian business firms will be looking more than ever to Washington to get help and guidance in working out common priority and allocation problems.

Prior to introduction of the end use code, an attempt was made to make PRP mandatory in Canada. This was about the same time it was introduced on a mandatory basis in the United States. It wasn't possible to meet the U. S. deadline, so the present program calls for all Canadian prime contractors and users of ray metals in excess of $5,000 quarterly, to get aboard PRP by August 1.

Here, again, the Canadian application forms are identical with the United States. So every simplification in United States procedure will bring a big sigh of relief on this side of the 49th parallel. About a third of the big war contracting firms in Canada were already operating under PRP prior to July 1. The rest are being required to conform by August 1.

To assist in linking control and priority machinery in the two countries, American authorities have been making an extensive study of the program through which Canada limits production of non-essential civilian goods and services. The results of this check have been, on the whole, favorable to Canada. In many cases the more informal, cooperative Canadian system has been even more restrictive on civilian production than the more complicated United States control machinery.

In Canada, chief responsibility for most control restriction rests with thirteen Controllers, some of whom were appointed as far back as June, 1940. They have the widest possible powers to regulate the use, supply and distribution of key materials, services or products needed in the war effort. Each controller is a member of the Wartime Industries Control Board, chaired by R. C. Berkinshaw, on loan from his peacetime job as general manager of the Goodyear Tire and Rubber Co. Canada's director-general of priorities, W. E. Uren, is also a member of the board. (Mr. Uren is a native of South Dakota who came to Canada in the last war and was closely associated with Munitions production and allocation at that time. He has lived in Canada ever since). Other members of the Control Board with their responsibilities are:

Aviation	Ralph P. Bell
Chemicals	E. T. Sterne
Construction	C. Blake Jackson
Machine Tools	Thomas Arnold
Metals	George Bateman
Motor Vehicles	J. H. Berry
Oil	George Cottrelle
Power	H. J. Symington
Ship Repairs	D. B. Carswell
Steel	F. B. Kilbourn
Supplies (including silk, rubber, kapok, metal furniture, nylon, stoves, bicycles, etc.)	A. H. Williamson

As Americans ponder the type of tax bill which will finally emerge from Washington, the example set by Canada a few weeks ago in its 1942-43 fiscal year is impressive. Normally, Canada's federal government spends $400 or $500 millions a year. The 1942-43 budget calls for total spending of $3.9 billions. In terms of relative national income, this represents a United States expenditure of almost $60 billions. The total includes $2.3 billions of direct war expenditures, and $1 billion, the gift of munitions and supplies being made by Canada to Great Britain.

The confiscatory tax measures which Finance Minister Ilsley introduced along with his budget place a levy of more than $2 billions on Canadian citizens and corporations. Thus, Canada will collect 53% of war and other costs by income, corporation and other taxes. Highlights of the budget include:

1. Excess profits tax on corporations boosted to 100% with a 30% flat-rate tax on all business profits not in excess of the pre-war standard.
2. 20% of excess profits tax to be refunded to business after the war whenever the tax paid is at the full 100% rate.
3. A new sliding scale income tax which starts at 37%, above exemptions ($660 for single persons and $1200 for married persons) and rises to 92% in all incomes above $100,000.
4. A pay-as-you-earn provision for both business and personal taxes which requires monthly instalments for business and a deduction at source by employers on each and every paycheck after September 1.
5. A refundable tax credit for small personal incomes taxpayers, refundable after the war and ranging from $20 in the case of a single person with $700 a year to a top of $1,200. Life insurance premiums and principal payments on mortgages are accepted in lieu of this tax up to a certain amount. (This principle is entirely new in Canadian tax procedure.)
6. Heavy new luxury taxes (25% and 30%) on a wide range of merchandise; plus higher taxes on travel and communication services.

Edward T. Sterne. who was named to the office of Chemicals Controller in July, was formerly director of the explosives division of Allied War Supplies, Ltd.

Mr Sterne is a native of Brantford, Ontario, who was educated at Queen's University, Kingston, and the University of Chicago. He taught for two years at Queen's and during the last war was chief chemist of the Imperial Munitions Board explosives plant at Trenton, Ont. Later he went to England as foreign technical representatives of Shawinigan Water & Power Co.

In 1921, he returned to his father's company, G. F. Sterne & Sons, Ltd., chemical manufacturers of Brantford. He is now general manager of the company. Mr. Sterne is a past president of the Canadian Institute of Chemistry and the Ontario Association of Professional Engineers.

MARKETS IN REVIEW

By Paul B. Slawter, Jr.

Heavy Chemicals — Fine Chemicals — Coal Tar Chemicals — Raw Materials — Agricultural Chemicals — Pigments and Solvents

THINGS happen fast these days in the chemical industry and out of it. The government was pushing its war program ahead last month with full speed. There were some hitches, though. The "rubber scandal" became more muddled than ever. The transportation problem became more acute. The "black market" in steel was revealed to the legislature by a man named Higgins who was fighting for the right to make ships for the government. The government's national salvage program was well under way to bring in scrap rubber, iron, cooking fats, tin cans, etc.

A chart depicting the effect of price control in limiting price advances in various groups of commodities during the 33 months from Aug. 1939 to April 1942 was issued last month by the OPA. It shows the following interesting facts:

Commodity Group	Percent under control on April 18, 1942	Percent Price Increase Aug. '39-Apr. '42
Metals and metal products	92	11
House furnishing goods	89	20
Fuel and lighting materials	79	7
Miscellaneous	63	23
Lumber and building materials	50	23
Textile products	39	44
Hides and leather products	32	29
Foods	27	47
Chemicals and allied products	25	31
Farm products	3	71

Government orders last month did, among other things, the following:

Ethyl alcohol used in the manufacture of synthetic rubber was exempted from the provisions of General Maximum Price Regulation by Amendment No. 18 to Supplementary Regulation No. 1, effective August 4, 1942. The amendment applies only to ethyl alcohol covered by GMPR when used in the production of synthetic rubber. All other sales and deliveries of ethyl alcohol formulas included within the provisions of Revised Price Schedule 28, ethyl alcohol, still remain governed by that measure.

A committee of distinguished American chemists and chemical engineers to advise the WPB on technical processes was appointed to assist Dr. Ernest W. Reid, Chief, Chemicals Branch. Work of the committee will be to pass upon the relative merits of competing chemical processes involved in the war effort. They will try to find out which process does it quickest with the smallest amount of critical material.

What's Ahead... By next summer, a shortage of chemicals is expected which will affect consumer goods industies and the farmer, especially. The shortage will be due to the tremendous quantities of chemicals going into arms output The industry, already working at maximum capacity, has little room to expand.

When war production reaches its peak, and it hasn't yet, heavier burdens will be put on the chemical industry than it has yet felt. Most expansion of chemical plants has had to be abandoned because not enough materials are available for the plants and equipment. All output will be devoted to the war output.

Anti-freeze alcohol may have to be rationed. The patent anti-freezes are all going to airplanes or into other essential chemical uses.

War materials and military equipment of all kinds are taking all the synthetic resins.

The chief raw materials for making these synthetic resins will be short.

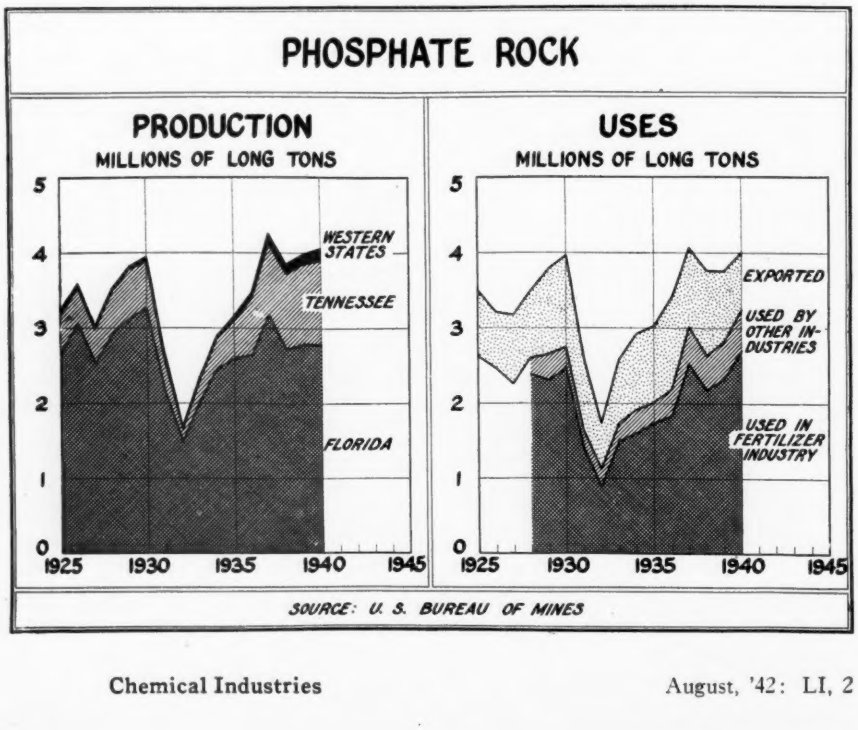
Soda ash, one of the most common heavy chemicals, may be short next year for the first time in its history when big new aluminum plants will be finished. Soda ash is needed in the chemical refining of bauxite (aluminum ore) to the tune of several hundred thousand tons. Original plans called for doubling some of the principal soda ash plants in the country but construction has been stopped to save materials.

There should be plenty for the aluminum plants. Over 3½ million tons of soda ash are made in this country each year—mostly from brine. The glass industry takes around 1 million tons yearly; soap takes a quarter of this and the chemical industry takes about 1½ million tons to make caustic soda and other chemicals.

The glass industry, largest consumer, will bear the brunt of the rationing that will have to be done. Glass for non-essential, civilian uses—table wear, building blocks, windows—will probably be curtailed to save glass for containers, needed to ease the tin shortage. At the moment there is plenty of soda ash. But a new shortage seems bound to appear. Shortage in soda ash may also affect another alkali, caustic soda, used mainly

Chemical Production

Leveling off after a sharp rise, chemical output for the past four months has held at a steady rate, according to the Federal Reserve Board's unadjusted index. For June the index stood at 165 compared with 166 in May, 167 for April and 166 in March. In June, 1941, the figure was 138.



in making rayon, soap and chemicals; it will be called on to substitute for soda ash in various places. Exports of caustic soda have already been curtailed although South America is crying for it.

A big deposit of natural soda ash has been found in the west, but alkali producers believe that it will not be developed right away because of the lack of equipment needed for mining it and the transportation difficulties involved.

Chlorine will be increasingly scarce. It is needed for nearly every new chemical development essential to the war.

Until recently plans called for almost doubling the nation's chlorine production by building new plants, but this expansion has practically been abandoned for the time being. Shortages of materials is the reason.

Fortunately for industry, a few of the most essential chemicals are plentiful and are expected to continue so. There is ample sulfur and sulfuric acid, for example. Using all the facilities of the whisky distilleries would eliminate an alcohol shortage for war needs.

The supply of cellulose made from cotton linters and from wood pulp will probably be ample; it is the basic material for smokeless powder. So far it seems likely that there will also be enough cellulose for making rayon and plastics.

Chemical companies are now using every available bit of equipment and are building a good many new plants out of junk piles. Old and obsolete equipment has been dug up from warehouses and scrap heaps and reconditioned. It is obviously not too efficient but it will save materials and help to swell output. Leaders in the industry believe that a great deal more can be done along this line.

Heavy Chemicals: A provision to permit stockpiling of chlorate chemicals by large industrial users was added to order M-171 this month by the WPB. Under the new provision, present inventories may be frozen and month by month consumption met by allocation. Another new provision increases unrestricted deliveries to any one person in any one month from 10 to 25 pounds. Sulfuric acid is being bought in tremendous quantities. Production is heavy and munitions manufacture is taking it from non-essential uses. Chlorine and ammonia are being taken in large quantities, too, for war uses. Oxalic acid manufacturers still haven't caught up on deliveries. WPB has acted to permit unlimited storage by industrial users of caustic soda and soda ash. An arrangement by which the chemical industry will be given greater autonomy within the scope of the Production Requirements Plan is being worked out by chemical chiefs and will probably go into effect October 1. WPB chemical experts contemplated "farming out" some 21 or 22 special research projects to private commercial and university chemical laboratories in various parts of the country. By this means it is hoped that some important, though not highly secret work can be done by chemical experts not now working directly for the war effort.

Fine Chemicals: Effective July 18, the general maximum prices on pine oil in dollars per gallon, f. o. b. producers plant, shall be either the sellers maximum price as determined under Section 1449.2 of the General Maximum Price Regulation or the following prices, whichever are lower:

	Basic Pine Oil	Alpha Terpineol	Light Gravity Pine Oil
Tank Cars	.55	1.05	.50
Carload, drums, or barrels	.60	1.10	.55
Less-than-carload, drums, or barrels	.63	1.13	.58

Commodities for Resale Purposes: The acute shortage of strategic materials and the urgent necessity for restricting available shipping space to the movement of commodities most vital to the country of destination make it imperative that licenses be confined to the most important uses only. Since the use cannot readily be shown in the case of items to be resold, it is suggested that applications for export licenses involving such items as automotive repair parts, repair and replacement parts for machinery, medicinals, pharmaceuticals, and all other commodities of an equally important class which are to be exported for resale purposes include the following supplementary information: (1) Statement of the actual shipments of the commodity concerned to

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the particular consignee involved in the application (a) during the year 1940, (b) during the year 1941, and (c) total shipments in 1942 plus the unused portion of outstanding licenses to date and, (d) total shipments involved in pending applications; (2) An estimate, with such supporting statements from the consignee as may be available, as to the status of the consignee's existing stocks and the length of time such stocks will last; (3) A statement of the reasons why such stocks are not considered excessive in the light of present conditions. (Questions (1) and (2) may be answered in terms of quantity or value or both.) The fine chemicals market, for the time being, is quiet. The spell is only expected to be temporary, however. A number of manufacturers are expected to appear in the market soon for chemicals to be used in the coming seasons. There is a report current that the OPA may request a revision of the U. S. Pharmacopoeia and National Formulary because of the present sugar situation.

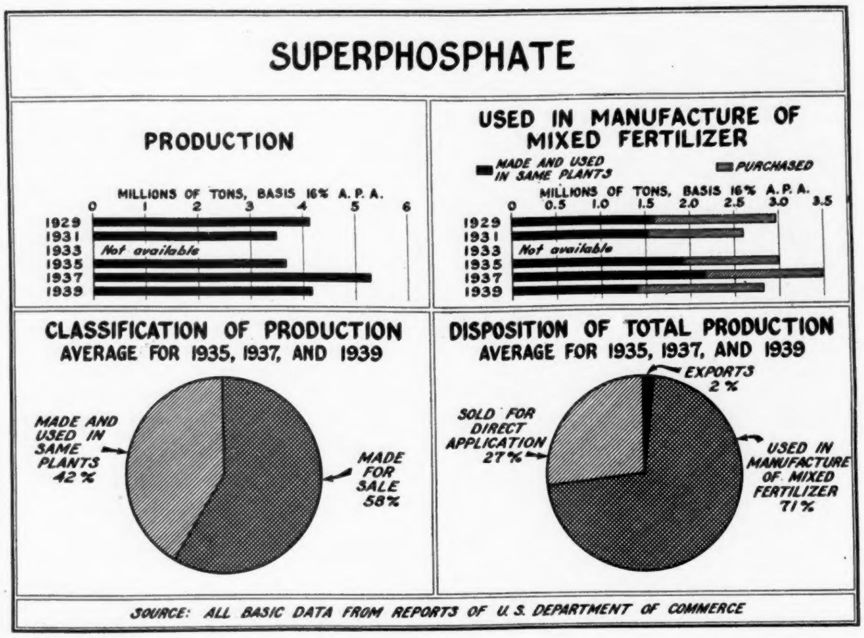
Paint Materials: There should be plenty of paint for civilians, in spite of what you hear to the contrary. Last winter a shortage threatened as wholesalers, dealers and even some individuals stocked up. This put backlogs on paint makers' order books. April price ceilings stemmed the trend; in May sales fell 18½% below last year, as demand slackened.

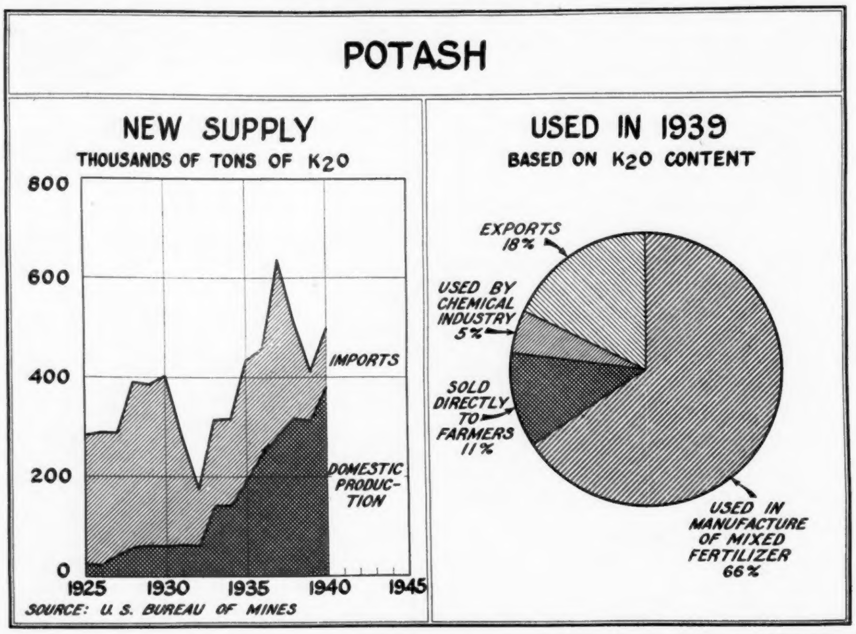
To maintain output, manufacturers have developed alternates (American industry doesn't like the word "substitute") for materials that are short. So some paints dry more slowly. Some colors aren't as bright. Paper, glass and wooden containers are replacing tin ones. But if a consumer wants paint he can get it.

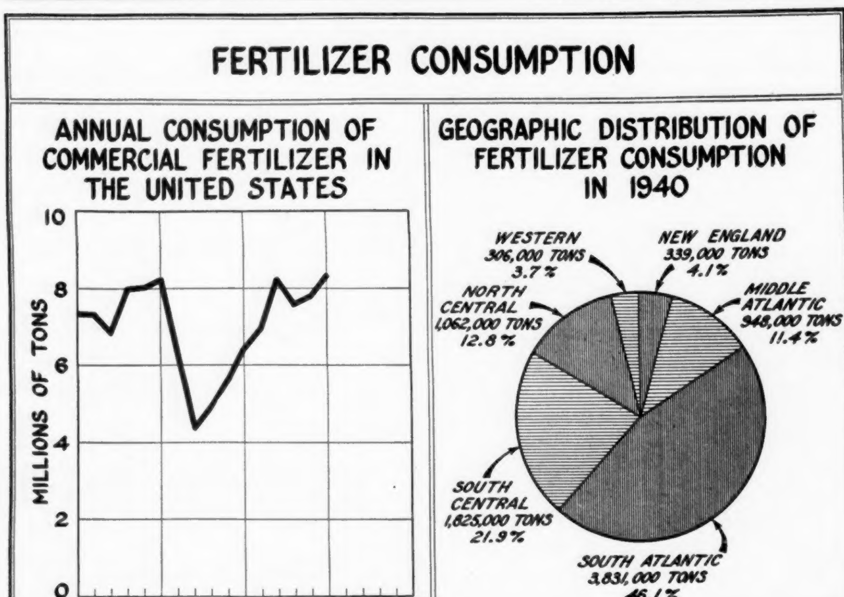
Despite further anticipated expansion in military paint requirements, total sales of protective coatings this fall may not reach last year's unusually high volume, members of the local paint materials trade believe, unless some new, unexpected war demand develops.

Paint sales during the past several months have varied greatly from area to area, largely reflecting the distribution of defense industries. The local metropolitan district has had probably the most disappointing spring season reported from any comparable market, owing to the relatively small volume of government business, it is pointed out. However, recently reports of poor sales for civilian painting have been received from defense area where it is complained that a shortage of labor is checking painting. Accordingly, civilian demand for the country as a whole in the coming months is expected to show a sharp decline below last year's fall business.

Home construction has been contracted sharply during the past six months and







except for defense housing will continue at extremely low levels throughout the year. Meanwhile, painting of houses already in existence has been decreased in many areas not only on account of the shortage of labor but also because of the attitude of "why paint if we may be bombed," according to trade reports.

Ceilings may militate against early improvement in ordering by stores, however, it is feared. It is pointed out that stores have relatively heavy stocks of paint and that with ceilings guaranteeing them against higher prices they are not inclined to buy far ahead.

As far as the drying oils themselves are concerned, the supply outlook is uncertain. If crop prospects are not reduced sharply here and in Canada production of linseed oil may be expected to be ample to meet all domestic requirements, provided it is not diverted. However, no one knows just how much oil may have to be shipped to the United Nations so that the free supply is problematical. On the other hand, it is generally felt that sufficient linseed oil will be available for domestic paint requirements.

Fertilizers: A letter addressed to fertilizer manufacturers doing business in the Middle Atlantic and Middle Western States, dated July 11, 1942, and signed by E. W. Reid, chief, Chemical Branch, War Production Board, requested that no mixed fertilizer containing chemical nitrogen be sold for use on fall-sown small grains and requesting that any fertilizer containing chemical nitrogen in the hands of agents after July, 1942, be disposed of only for the purpose of the production of 1942 vegetables. A list of approved grades for the 1942-43 fertilizer year by States is expected to be announced in the near future.

WPB has sent a letter to all manufacturers and mixers stating that the use of cyanamid will be restricted this year (1) to the conditioning of mixed goods and, (2) because of transportation problems, to the area north of Florida and east of the Alabama-Mississippi line extended due north. The cyanamid ordered by a manufacturer or mixer will be considered a part of his sulfate of ammonia allocation, ton for ton.

Natural Raw Materials: An agreement under which the United States will buy major quantities of six Brazilian products was announced this month by Jefferson Caffery, American Ambassador, who estimated producers in the South American Republic would receive $32,-490,000 in the first year.

The products listed were cotton linters and hull fibers, castor beans and oil, babassu oil and kernels, burlap, ipecac and rotenone.

The agreement, reached late last month, was announced in a statement issued by Mr. Caffery as he left with the American Commercial Attache, Walter J. Donnelly, for a two-week trip to the United States.

Terms announced were:

A four-year agreement for purchase of an unlimited quantity of babassu nuts and oil during the first two years, and up to 100,000 metric tons during each of the next two years;

American purchase of a minimum of 200,000 long tons of castor beans or the oil equivalent during the fiscal year 1942-43;

The United States will buy up 50,000 metric tons of second-cut cotton linters, up to 8,000 tons of first-cut linters and up to 10,000 tons of hull fiber between Aug. 1, of this year, and July 31, 1943;

American purchase by Dec. 31, 1943, of up to 50,000,000 yards of burlap made in Brazil. During the second year of the agreement, Mr. Caffery said, "it is anticipated as much as 100,000,000 yards of burlap may be sold to the United States."

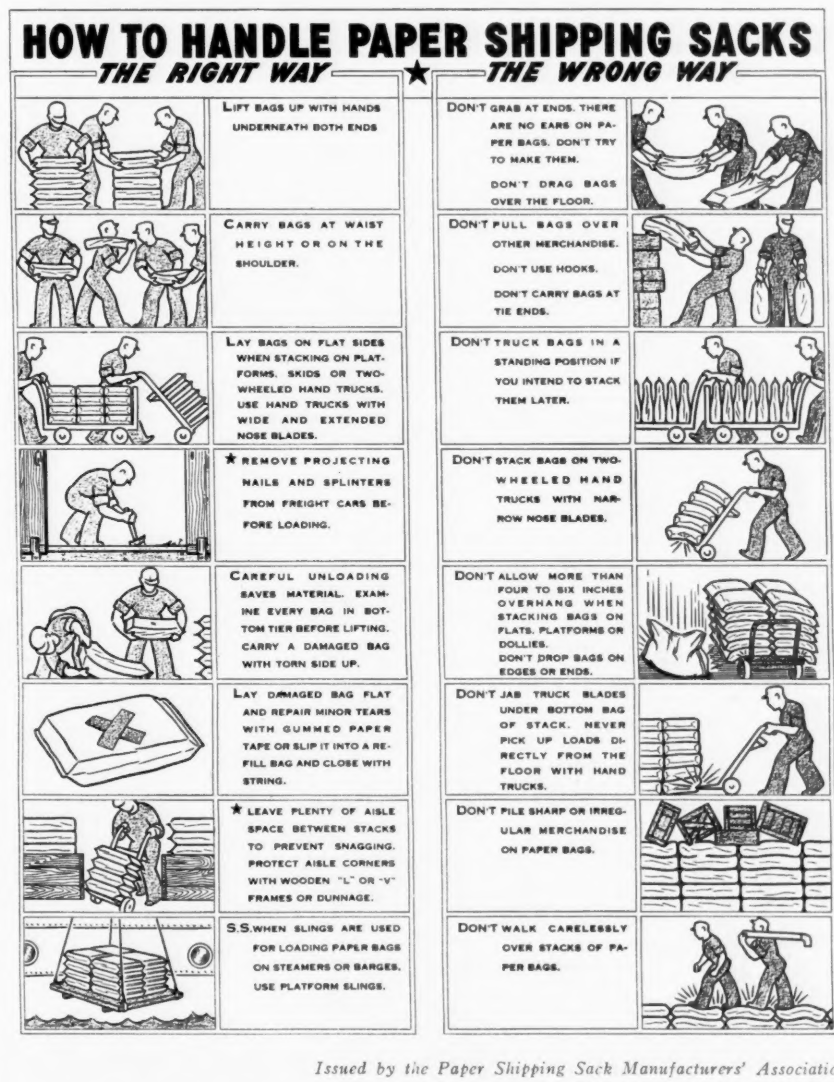
During a four-year period the United States will buy at favorable prices up to 4,000,000 pounds annually of rotenone, which is used in insecticides.

During the next eighteen months the United States and the British Empire will buy up to 150 metric tons of ipecac, medicinal herb.

The Government placed all shellac under complete allocation control July 31, virtually halting civilian use and presaging a further decrease in the amount of shellac available for phonograph record production.

Factory production and consumption of fats and oils in the second quarter sagged sharply from last year in all major vegetable sources except soy beans and corn, the Census Bureau reported yesterday.

Turpentine and rosin continue to flow through the loans into the stockpiles of the CCC. Weather has been highly favorable for production in this industry but the labor situation is a difficult one.



Issued by the Paper Shipping Sack Manufacturers' Association

Heavy Chemicals, Coal-Tar Products, Dye-and-Tanstuffs, Colors and Pigments, Fillers and Sizes, Fertilizer and Insecticide Materials, Petroleum Solvents and Chemicals, Naval Stores, Fats and Oils, etc.

PRICES CURRENT

Chemical prices quoted are of American manufacturers for spot New York, immediate shipment, unless otherwise specified. Products sold f.o.b. works are specified as such. Import chemicals are so designated.

Oils are quoted spot New York, ex-dock. Quotations f.o.b. mills, or for spot goods at the Pacific Coast are so designated.

Raw materials are quoted New York, f.o.b., or ex-dock. Materials sold f.o.b. works or delivered are so designated.

The current range is not "bid and asked," but are prices from different sellers, based on varying grades or quantities or both.

Purchasing Power of the Dollar: 1926 Average—$1.00 - 1940 Average $1.20 - Jan. 1941 $1.16 - July 1942 $0.93

	Current Market		1942 Low	1942 High	1941 Low	1941 High
Acetaldehyde, 99%, 55, 110 gal drs, wks ....lb.	...	.11	.11	.11	.11	.11
Acetaldol (Aldol), 55, 110 gal drs, c-l, wks ....lb.	..	.12	.12	.12	.11	.13
Acetamide, tech, kgs, wks .lb.	.28	.50	.28	.50	.28	.45
Acetanilid, tech, cryst, bbls ....lb.	.29	.31	.29	.31	.29	.31
powd, bbls ....lb.	.27	.29	.27	.29	.27	.29
Acetic Anhydride, drs, c-l, frt all'd ....lb.	.11½	.13	.11½	.13	.10½	.13
Acetin, tech, lcl drs .....lb.	...	.29	.29	.29	.29	.33
Acetone, tks, delv (*PC*) ..lb.	.07	.158	.07	.158	.06	.158
drs, c-l, delv (*PC*) ....lb.	.08½	.168	.08½	.173	.07½	.173
Acetonitrile, drs, wks ...lb.	1.00	2.00	1.00	2.00	1.00	2.00
Acetophenone, drs ....lb.	1.55	1.60	1.55	1.60	1.55	1.60
Acetophenetidin, bbls, kgs, 1000 lbs ....lb.	...	1.00	1.00	1.00	1.00	1.00

ACIDS

	Current Market		1942 Low	1942 High	1941 Low	1941 High
Acetic, 28%, bbls (*PC*) 100 lbs.	3.38	3.63	3.38	3.63	2.23	3.43
glacial, nat, bbls ..100 lbs.	9.15	9.40	9.15	9.40	7.62	8.55
synth, drs ....100 lbs.	9.15	9.40	9.15	9.40	7.62	8.55
tks, wks ....100 lbs.	6.25	6.93	6.25	6.93	...	...
Acetylsalicylic, USP, (*PC*) special, 200 lb bbls ....lb.	...	.45	.45	.45	.45	.45
Standard USP ....lb.	...	.40	.40	.40	.40	.40
Adipic, fib drs, wks .....lb.	...	.31	.31	.31	.31	.31
Anthranilic, ref'd bbls ...lb.	1.20	1.25	1.20	1.25	1.15	1.20
tech, bbls ....lb.	...	.95	.95	.95	.75	.95
Ascorbic, bots, drs (*PC*) oz.	1.50	1.70	1.50	1.85	1.85	2.10
Battery, cbys, wks ..100 lbs.	1.60	2.55	1.60	2.55	1.60	2.55
Benzoic, tech, bbls ......lb.	.43	.47	.43	.47	.43	.47
USP, bbls ....lb.	.54	.59	.54	.59	.54	.59
Boric, tech, gran, frt all'd bgs 40 tons ....ton *a*	...	99.00	99.00	99.00	93.50	99.50
bbls ....ton *a*	...	109.00	108.00	109.00	108.00	108.00
Broenner's, bbls ....lb.	...	1.11	1.11	1.11	1.11	1.11
Butyric, c-l drs, wks .....lb.	...	.22	.22	.22	.22	.22
tks, wks ....lb.	...	.21	.21	.21	.21	.21
Caproic, drs, wks ....lb.	...	.35	.25	.35	.25	.30
Chlorosulfonic, drs, wks ..lb.	.03	.04½	.03	.04½	.03½	.05
tks, wks ....lb.	...	.02½	.02½	.02½	...	...
Chromic, drs (*FP*) ......lb.	.16¼	.18¼	.16¼	.18¼	.15¼	.17¼
Citric, crys, gran, bbls ..lb. *b*	.20	.21	.20	.21	.20	.21
Anhyd gran, drs (*PC*) lb.	.23½	.26½	.22½	.26½	.23	.26½
Cleve's bbls ....lb.	...	.65	.65	.65	.65	.65
Cresylic 50%, 210-215° HB, drs, wks, frt equal (A) gal.	.81	.83	.81	.86	.76	.84
Low Boiling ....gal.	.81	.83	.81	.86	.76	.84
Formic, tech, cbys ....lb.	.10½	.11½	.10½	.11½	.10½	.11½
Fumaric, bbls ....lb.	.27	.31	.27	.31	.24	.29
Gallic, tech, bbls ....lb.	1.10	1.12	1.10	1.13	.90	1.13
NF bbls ....lb.	1.27	1.30	1.27	1.30	1.10	1.30
H, bbls wks ....lb.	...	.45	.45	.45	.45	.45
Hydrochloric, see muriatic						
Hydrocyanic cyls, wks ...lb.	.80	1.00	.80	1.00	.80	1.00
Hydrofluoric, 30%, bbls, wks ....lb.	.06	.06½	.06	.06½	.06	.06½
Hydrofluosilic, 35%, bbls lb.	.09	.09½	.09	.09½	.09	.09½
Lactic, 22% dark, bbls ...lb.	.029	.0315	.029	.035	.02½	.035
22%, light, bbls wks ...lb.	.039	.0415	.039	.0415	.03½	.0415
44%, dark, bbls wks ...lb.	.063	.0655	.063	.0655	.05½	.0655
44%, light, bbls wks ...lb.	.073	.0755	.073	.0755	.06½	.073
Lauric, dist, tech, drs ....lb.	.20	nom.	.20	.20½	.15	.18¾
Laurent's bbls ....lb.	...	.45	.45	.45	.45	.45
Maleic, powd, drs ....lb.	...	.30	.30	.30	.30	.30
Anhydride, drs ....lb.	.25	.26	.25	.26	.25	.26
Malic, powd, kgs ....lb.	...	.47	.47	.47	.47	.47
Mixed, tks N unit ....lb.	.05	.06	.05	.06	.05	.06
S unit ....lb.	.0085	.009	.0085	.009	.0085	.009
Molybdic, kgs, wks ......lb.	.95	1.10	.95	1.10	.95	1.10
Monochloracetic, tech, bbls ....lb.	...	.17	.17	.17	.15	.18
Monosulfonic, bbls ....lb.	...	1.50	1.50	1.50	1.50	1.50
Muriatic, 18° cbys, c-l wks ....100 lb.	...	1.50	1.50	1.50	1.50	1.50
tks, wks ....100 lb.	...	1.05	1.05	1.05	1.05	1.05
20° cbys, c-l, wks ..100 lb.	...	1.75	1.75	1.75	1.75	1.75
tks, wks ....100 lb.	...	1.15	1.15	1.15	1.15	1.15
22° cbys, c-l, wks ..100 lb.	...	2.25	2.25	2.25	2.25	2.25
tks, wks ....100 lb.	...	1.65	1.65	1.65	1.65	1.65

a Powdered boric acid $5 a ton higher; USP $25 higher; *b* Powdered citric is ½c higher; kegs are in each case ½c higher than bbls; Prices are f.o.b. N. Y., Chicago, St. Louis, deliveries ½c higher than NYC prices; *y* Price given is per gal.

(*A*) Allocations. (*FP*) Under full priority control. (*PC*) Under price ceiling.

	Current Market		1942 Low	1942 High	1941 Low	1941 High
Acid (continued):						
CP cbys ....lb.	.06½	.08	.06½	.08	.06½	.08
Myristic, dist, drs ....lb.	.19	.19½	.18	.19½	.18	.18½
Naphthenic drs, 220-230 lb.		.13	.10	.13	.10	.10
tks, wks (A) ....lb.		.10	.09	.10	.09	.09
Naphthionic, tech, bbls lb.	.60	.65	.60	.65	.60	.65
Nicotinic fib-dms ....lb.	5.00	5.50	5.00	7.15	7.15	7.15
Nitric, 36°, cbys, c-l, wks ....100 lbs. *c*	...	5.00	5.00	5.00	5.00	5.00
38°, c-l, cbys, wks 100 lbs. *c*	...	5.50	5.50	5.50	5.50	5.50
40°, c-l, cbys, wks 100 lbs. *c*	...	6.00	6.00	6.00	6.00	6.00
42°, c-l, cbys, wks 100 lbs. *c*	...	6.50	6.50	6.50	6.50	6.50
CP, cbys ....lb.	.11½	.13	.11½	.13	.11½	.13
Oxalic, bbls, wks (*PC*) ..lb.	.11¼	.12½	.11¼	.14½	.11½	.14¼
Phosphoric, 85% USP, cbys ....lb.	...	.12	.12	.12	.12	.12
50% food grade, c-l, bbls, wks, frt equal ..100 lbs.	4.00	4.25	4.00	4.25	4.00	4.25
Picramic, kgs ....lb.	.65	.70	.65	.70	.65	.70
Picric, bbls, wks ....lb.	...	.35	.35	.35	.35	.35
Propionic, pure, drs, wks lb.	...	.14	.14	.14	.14	.14
tks, wks ....lb.	...	.11	.11	.11	.11	.11
Pyrogallic, tech, lump, pwd, bbls ....lb.	...	1.45	1.45	1.45	1.45	1.45
USP, cryst, cns .....lb.	...	2.10	2.10	2.10	1.70	2.25
Pyroligneous, bbls, delv gal.	...	.25	.25	.25	.25	.25
Ricinoleic, tech, drs, wks lb.	.32	.37	.32	.37	.32	.37
Salicylic, tech, 125 lb bbls, wks (*PC*) ....lb.	...	.33	...	.33	...	.33
USP, bbls ....lb.	.35	.46	.35	.46	.35	.40
Sebasic, tech, bbls, wks ..lb.	...	.82	.82	.82	.82	.82
Stearic, see under Oils & Fats						
Succinic, bbls ....lb.	...	.75	...	.75	...	.75
Sulfanilic, 250 lb drs, wks lb.	...	.17	...	.17	...	.17
Sulfuric, 60°, tks, wks ..ton	...	13.00	...	13.00	...	13.00
c-l, cbys, wks ....100 lb.	...	1.25	...	1.25	...	1.25
66°, tks, wks ....ton	...	16.50	...	16.50	...	16.50
c-l, cbys, wks ....100 lb.	...	1.50	..	1.50	...	1.50
CP, cbys, wks ....lb.	.06½	.08	.06½	.08	.06½	.08
Fuming (Oleum) 20% tks, wks ....ton	...	19.50	...	19.50	18.50	19.50
Tannic, tech, 300 lb bbls ..lb.	.71	.73	.71	.73	.54	.73
Tartaric, USP, gran, powd, 300 lb bbls ....lb.	...	.70½	...	.70½	.46¼	.70½
Tobias, 250 lb bbls ......lb.	.55	.60	.55	.60	.55	.60
Trichloroacetic bottles ...lb.	2.00	2.50	2.00	2.50	2.00	2.50
Tungstic, pure 100 lb. pkg. (A) ....lb.	...	2.86	...	2.86	no prices	
Acrylonitrile, tks (A) ...lb.	...	.34	.34	.34	...	...
Albumen, light flake, 225 lb bbls ....lb.	...	.65	.65	.75	.55	.75
dark, bbls ....lb.	...	.13½	.12½	.14	.13	.18
egg, edible ....lb.	1.73	1.78	1.73	1.85	.65	1.85
Alcohol, Amyl (from Pentane) tks, delv ....lb.	...	.131	...	.131	.111	.131
c-l, drs, delv ....lb.	...	.141	...	.141	.121	.141
lcl, drs, delv ....lb.	...	.151	...	.151	.131	.151
Amyl, normal lcl drs Wyandotte, Mich. .....lb.	...	.27	.27	.42	.25	.27
secondary, tks, delv ....lb.						
drs, c-l, delv E of Rockies ....lb.	...	.09½	...	.09½	...	.09½
tertiary, rfd, lcl, drs, f.o.b., Wyandotte, frt all'd ....lb.	...	.09	...	.09	...	.09
Benzyl, cans ....lb.	.65	.75	.65	.75	.65	.75
Butyl, normal, tks, f.o.b. wks, frt all'd (*PC*) (A) ....lb.	.13½	.168	.12½	.168	.09	.158
c-l, drs, f.o.b. wks, frt all'd ....lb.	.14	.173	.13½	.173	.10	.168
Butyl, secondary, tks, delv ....lb.	...	.08½	...	.08½	.07¼	.08½
c-l, drs, delv ....lb.	...	.09½	...	.09½	.08¼	.09½
Butyl, tert denat c-l drs lb.	...	.12½	...	.12½	...	.12½
lcl drs ....lb.	...	.13	...	.13	...	.13
tks ....lb.	...	.11½	...	.11½	...	.11½
Capryl, drs, crude, wks lb.	...	.16	...	.16	...	.16
Cinnamic, bottles ......lb.	3.00	3.60	3.00	3.60	2.33	3.60
Denatured, CD, 14, c-l drs, wks (*PC, FP*) gal.	...	.65	...	.65	.36½	.45½
tks, East, wks ......gal.	...	.58	...	.58	.26½	.58
Denatured, SD, No. 1, tks,	...	.53	...	.53	.28½	.53

c Yellow grades 25c per 100 lbs. less in each case. *d* Prices given are Eastern schedule; Territories other east of Rockies and 15½c per gal. less than Eastern Works price.

ABBREVIATIONS—Anhydrous, anhyd; bags, bgs; barrels, bbls; carboys, cbys; carlots, c-l; less-than-carlots, lcl; drums, drs; kegs, kgs; powdered, powd; refined, ref'd; tanks, tks; works, f.o.b., wks.

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	Current Market		1942 Low	1942 High	1941 Low	1941 High
Alcohols (continued):						
Diacetone, pure, c-l drs, delv ....lb. *f*	.11½	.14½	.11½	.14½	.09½	.13
tks, delv ....lb.	.10½	.13½	.10½	.13½	.10½	.13½
tech, contract, drs, c-l, delv ....lb.	.11	.13½	.11	.13½	.09	.12
tks, delv ....lb.	.10	.12½	.10	.14	.10	.12½
Ethyl, 190 proof molasses, tks ....gal. *g*	...	8.12	...	8.12	5.96½	8.12
c-l, drs ....gal. *g*	...	8.19	...	8.19	6.02½	8.19
c-l, bbls ....gal. *g*	...	8.25½	...	8.25½	6.03½	8.25
Furfuryl, tech, 500 lb. drs lb.	.20	.35	.20	.35	.20	.25
Hexyl, secondary tks, delv lb.	...	.23	...	.23	.12	.23
c-l, drs, delv ....lb.	...	.24	...	.24	...	.13
Isoamyl, prim, cans, wks lb.	...	.32	...	.32	...	.32
drs, lcl, delv ....lb.	...	.22½	...	.22½	.22½	.27
Isobutyl, ref'd, lcl, drs lb.	...	.086	...	.086	.079	.086
c-l, drs ....lb.	...	.076	...	.076	.069	.076
tks ....lb.	...	.076	...	.076	.069	.076
Ethylhexyl, tks, wks ...lb.	.23	.25	.23	.25	.23	.23
Isopropyl, ref'd, 91% drs, frt all'd ....gal.	.40½	.43½	.40½	.43½	.40½	.43½
tks, frt all'd ....gal.	...	.34	.34	.34	.34	.34
99%, drs, frt all'd ..gal.	.44	.47	.44	.47	.44	.47
tks, frt all'd ....gal.	...	.37½	.37½	.37½	.37½	.37½
Octyl, see Ethylhexyl						
Polyvinyl A fib drs ....lb.	...	.65	.54	.65	.26	.54
B fib drs ....lb.	.60	.65	.60	.70	...	...
Propyl, nor, drs, wks gal.	.67	.70	.69	.75	...	...
Spec Solvents, East, drs, wks ....gal.	...	.61	.61	.70	...	...
tks, East, wks ....gal.	...	.54	.54	.66	...	...
Tetrahydrofurfuryl drs, f.o.b. wks ....lb.	.44	.50	.44	.50	...	...
Aldehyde ammonia, 100 gal drs ....lb.	.65	.70	.65	.70	.65	.70
Aldehyde Bisulfite, bbls, delv ....lb.	...	.17	...	.17	...	.17
Aldol, 95%, 55 and 110 gal, drs, delv ....lb.	.12	.15	.12	.15	.11	.15
Alphanaphthol, crude, 300 lb bbls ....lb.	...	.52	...	.52	...	.52
Alphanaphthylamine, 350 lb bbls ....lb.	...	.32	...	.32	...	.32
Alum, ammonia, lump, c-l, bbls, wks ......100 lb.	...	4.25	...	4.25	3.75	4.25
delv NY, Phila ..100 lb.	...	4.25	...	4.25	3.75	4.25
Granular, c-l, bbls wks ....100 lb.	...	4.00	...	4.00	3.50	4.00
Powd, c-l, bbls, wks 100 lb.	...	4.40	...	4.40	3.90	4.40
Potash, lump, c-l, bbls, wks ....100 lb.	...	4.50	...	4.50	4.00	4.50
Granular, c-l, bbls, wks ....100 lb.	...	4.25	...	4.25	3.75	4.25
Powd, c-l, bbls, wks 100 lb.	...	4.65	...	4.65	4.15	4.65
Soda, bbls, wks ....100 lb.	...	3.25	...	3.25	...	3.25
Chrome, bbls ......100 lb.	.12½	.15	.12½	.15	no prices	
Aluminum metal, c-l, (*FP*) ....100 lb.	15.00	16.00	15.00	16.00	17.00	18.00
Acetate, 20%, nor sol, bbls ....lb.	.09½	.10½	.09½	.11	.10½	.11
Basic powd, bbls, delv lb.	.40	.50	.40	.50	.35	.50
24% sol, bbls, delv lb.	.10½	.11	.10½	.11	.09½	.12
Chloride anhyd 99% wks lb.	.08	.12	.08	.12	.08	.12
Crystals, c-l, drs, wks lb.	.06	.06½	.06	.06½	.06	.06½
Solution, drs, wks ...lb.	.02¾	.03¼	.02¾	.03¼	.02¾	.03¼
Formate, 30% sol bbls, c-l, delv ....lb.	.13	.15	.13	.15	.13	.15
Hydrate, 96%, light, 90 lb. bbls, delv (A) ......lb.	...	.14½	...	.14½	.12½	.14½
heavy, bbls, wks ....lb.	...	.034	...	.034	.029	.03½
Oleate, drs ....lb.	...	.24½	.17½	.26	.17½	.20
Palmitate, bbls ....lb.	.25	.26	.25	.26	.20½	.26
Resinate, pp., bbls .....lb.	...	.15½	.15	.15½	...	.15
Stearate, 100 lb bbls ..lb.	.23	.24	.22	.24	.18	.23
Sulfate, com, c-l, bgs, wks ....100 lb.	1.15	1.25	1.15	1.25	1.15	1.25
c-l, bbls, wks ....100 lb.	1.35	1.45	1.35	1.45	1.35	1.45
Sulfate, iron-free, c-l, bgs, wks ....100 lb.	1.75	1.85	1.75	1.85	1.60	1.85
c-l, bbls, wks ....100 lb.	1.95	2.05	1.95	2.05	1.80	2.10
Ammonia anhyd fert com, tks lb.	.04½	.05	.04½	.05	.04½	.05
Ammonia anhyd, 100 lb cyl lb.	...	.16	...	.16	...	.16
26°, 800 lb drs, delv ...lb.	.02¼	.02½	.02¼	.02½	.02¼	.02½
Aqua 26°, tks, NH_3 cont.	...	.04	.04	.08z	.04	.05¼
Ammonium Acetate, kgs ..lb.	.27	.33	.27	.33	.27	.33
Bicarbonate, bbls, f.o.b. wks ....100 lb	.0564	.0614	.0564	.0614	.0564	.0614
Bifluoride, 300 lb bbls ..lb.	.16	.18	.15½	.18	.14	.18
Carbonate, tech, 500 lb bbls ....lb.	.08¼	.09¼	.08¼	.09¼	.08¼	.09¼
Chloride, White, 100 lb. bbls, wks ......100 lb.	...	4.45	4.45	...	4.45	...
Gray, 250 lb bbls, wks ....100 lb.	5.50	5.75	5.50	5.75	5.50	5.75
Lactate, 500 lb bbls ...lb.	.15	.16	.15	.16	.15	.16
Laurate, bbls ....lb.	...	.23	...	.23	...	.23
Linoleate, 80% anhyd, bbls ....lb.	...	.12	...	.12	...	.12
Nitrate, tech, bgs, bbls lb.	.0435	.0455	.0435	.0455	.0435	.0455
Oleate, drs ....lb.	...	.14	...	.14	...	.14
Oxalate, neut, cryst, powd, bbls ....lb.	.23	.29	.23	.29	.19	.29
Perchlorate, kgs (A) ...lb.	.55	.65	.55	.65	.55	.65
Persulfate, 112 lb kgs lb.	.25½	.28½	.21	.28½	.21	.22

z On a f.o.b. wks. basis.
(A) Allocation

	Current Market		1942 Low	1942 High	1941 Low	1941 High
Ammonium (continued):						
Phosphate, diabasic tech, powd, 325 lb bbls ...lb.	...	.07¼	.09¼	.09¼	.07¼	.09
Ricinoleate, bbls ....lb.	...	.15	...	.15	...	.15
Stearate, anhyd, bbls...lb.	...	.24½	...	.24½	...	.24
Paste, bbls ....lb.	...	.06½	...	.06½	...	.06
Sulfate, dom. f.o.b., bulk (A) ....ton	29.00	30.00	29.00	30.00	29.00	30.00
Sulfocyanide, pure, kgs lb.	.45	.55	.45	.55	.45	.65
Amyl Acetate (from pentane) tks, delv ....lb.	...	.145	...	.145	.105	.145
c-l, drs, delv ....lb.	...	.155	...	.155	.115	.155
lcl, drs, delv ....lb.	...	.165	...	.165	.125	.165
tech drs, ex-fusel oil delv lb.	.14½	.17	.14½	.17	...	.14
Secondary, tks, delv ...lb.	...	.08½	...	.08½	...	.08
c-l, drs, delv ....lb.	...	.09½	...	.09½	...	.09
tks, delv ....lb.	...	.08½	...	.08½	...	.08
Chloride, norm, drs, wks ib.	no prices		.56	.68	.56	.68
mixed l c l drs, wks lb.	...	.08	...	.08	.0565	.08
tks, wks ....lb.	...	.06	...	.06	.0465	.06
Amyl Ether (see Diamyl						
lcl, dms ....lb.	...	.102	...	.102	...	...
cl, dms ....lb.	...	.095	...	.095	...	...
tks ....lb.	...	.085	...	.085	...	...
Mercaptan, drs, wks ...lb.	...	1.10	...	1.10	...	1.10
Oleate, lcl, wks, drs....lb.	...	.31	...	.31	.25	.31
Stearate, lcl, wks, drs..lb.	...	.32½	...	.32½	.26	.335
Amylene, c-l, drs, f.o.b. wks, ...lb.	...	.102	.102	.11	.102	.11
lcl, dms, f.o.b., wks	...	.11	...	.11	...	...
tks, f.o.b., wks....lb.	...	.09	...	.09	...	.09
Amylnaphthalenes, see Mixed Amylnaphthalenes						
Aniline Oil, 960 lb drs and tks ....lb.	.12½	.16	.12½	.16	...	.14½
Annatto fine ....lb.	.34	.39	.34	.39	.34	.39
Anthracene, 80-85% ......lb.	...	.55	...	.55	...	.55
Anthraquinone, sublimed, 125 lb bbls ....lb.	...	.70	...	.70	.65	.70
Antimony metal slabs, ton lots ....lb.	...	.14½	.14	.14½	.14	.16½
Butter of, see Chloride						
Chloride, soln, cbys ....lb.	...	.17	...	.17	...	.17
Needle, powd, bbls ..lb.	.18½	.20	.18½	.20	.16	.18
Oxide, 500 lb bbls (A)..lb.	.15	.15½	.15	.16½	.12	.16½
Salt, 63% to 65%, drs lb.	...	.40	.34	.40	.28	.34
Archil, conc, 600 lb bbls lb.	...	.26	...	.26	no prices	
Aroclors, wks ....lb.	.18	.30	.18	.30	.18	.30
Arrowroot, bbls ....lb.	.09½	.09¾	.09½	.10¾	.09½	.10¾
Arsenic, Metal ....lb.	no prices		no prices		no prices	
Red, 224 lb cs kgs .lb.	no prices		no prices		no prices	
White, 112 lb kgs. (A) lb.	.04	.04¾	.04	.04¾	.03½	.04¾
B						
Barium Carbonate precip, 200 lb bgs, wks .....ton	55.00	65.00	55.00	65.00	45.00	65.00
Nat (witherite) 90% gr, c-l, wks, bgs ....ton	...	43.00	...	43.00	...	43.00
Chlorate, 112 lb kgs, NY (A) ....lb.	...	.60	...	.60	...	.45
Chloride, 600 lb bbls, delv, zone 1 ....ton	77.00	92.00	77.00	92.00	77.00	92.00
Dioxide, 88%, 690 lb drs lb.	...	.10	...	.10	...	.10
Hydrate, 500 lb bbls ...lb.	.06	.07	.06	.07	.05½	.07
Nitrate, bbls ....lb.	.11	.12	.10½	.12½	.08½	.12½
Barytes, floated, 350 lb bbls c-l, wks ....ton	...	27.65	...	27.65	25.15	27.65
Bauxite, bulk mines (A) ton	7.00	10.00	7.00	10.00	7.00	10.00
Bentonite, c-l, 325 mesh, bgs, wks ....ton	...	16.00	...	16.00	...	16.00
200 mesh ....ton	...	11.00	...	11.00	...	11.00
Benzaldehyde, tech, 945 lb. drs, wks ....lb.	.45	.55	.45	.55	.45	.55
Benzene (Benzol), 90%, Ind. 8000 gal tks, ft all'd gal.	(A)	.15	...	.15	.14	.15
90% c-l, drs ....gal.	...	.20	...	.20	.19	.20
Ind pure, tks, frt all'd gal.	...	.15	...	.15	.14	.15
Benzidine Base, dry, 250 lb. bbls ....lb.	...	.70	...	.70	...	.70
Benzoyl Chloride, 500 lb drs lb.	.23	.28	.23	.28	.23	.28
Benzyl Chloride, 95-97% rfd, drs ....lb.	.22	.24	.22	.24	.19	.24
Beta-Naphthol, 250 lb bbls, wks ....lb.	.23	.24	.23	.24	.23	.24
Naphthylamine, sublimed, 200 lb bbls ....lb.	...	1.25	1.25	...	1.25	1.35
Tech, 200 lb bbls ....lb.	...	.51	...	.51	.51	.52
Bismuth metal ....lb.	...	1.25	...	1.25	...	1.25
Chloride, boxes ....lb.	...	3.00	...	3.00	3.00	3.25
Hydroxide, boxes ......lb.	3.35	3.46	3.35	3.46	3.35	3.46
Oxychloride, boxes ....lb.	3.10	3.19	3.10	3.19	3.10	3.19
Subbenzoate, fib dms....lb.	...	3.40	...	3.40	...	3.40
Subcarbonate, kgs ....lb.	1.59	1.85	1.59	1.85	1.59	1.85
Subnitrate, fibre, drs ...lb.	1.29	1.57	1.29	1.57	1.20	1.57
Trioxide, powd, boxes lb.	...	3.65	...	3.65	...	3.65
Blanc Fixe, Pulp, 400 lb. bbls, wks ....ton *h*	40.00	46.50	40.00	46.50	35.00	46.50
Bleaching Powder, 800 lb drs, c-l, wks, contract 100 lb.	2.25	3.10	2.25	3.10	2.00	3.10
lcl, drs, wks ...... lb.	2.50	3.35	2.50	3.35	2.25	3.35
Blood, dried, f.o.b., NY unit	5.60	5.75	5.25	5.75	4.75	5.25
Chicago, high grade ..unit	5.70	5.75	5.40	5.80	5.00	5.40
Imported shipt ...unit	5.45	5.50	5.00	5.50	4.75	5.00
Blues, Bronze Chinese						
Prussian Soluble ....lb.	...	.36	...	.36	.33	.36
Milori, bbls ....lb.	...	.36	...	.36	.33	.36

h Lowest price is for pulp, highest for high grade precipitated; *i* Crystals $6 per ton higher; USP, $15 higher in each case; * Freight is equalized in each case with nearest producing point.

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	Current Market		1942 Low	1942 High	1941 Low	1941 High
Blues (continued):						
Ultramarine,* dry, wks, bbls ....lb.	.12	.13	.11	.13	...	.11
Regular grade, group 1 lb.	.17	.27	.16	.27	.16	.20
Pulp, Cobalt grade ...lb.	.23	.27	.22	.27	.22	.24
Bone, 4½ + 50% raw, Chicago ....ton	39.00	40.00	39.00	40.00	30.00	40.00
Bone Ash, 100 lb kgs ...lb.	.06	.07	.06	.07	.06	.07
Meal, 3% & 50% imp ton	.	37.50	..	37.50	31.50	37.50
Domestic, bgs, Chicago ton	38.00	40.00	38.00	40.00	32.00	40.00
Borax, tech, gran, 80 and 40 ton lots, bgs, delv ..ton *j*	...	46.00	45.00	46.00	43.00	45.00
bbls, delv (*FP*) . ton *j*	...	55.00	54.00	55.00	53.00	56.00
Tech, powd, 80 and 40 ton lots, bgs ....ton	...	51.00	50.00	51.00	48.00	50.00
bbls, delv ..ton	.	60.00	59.00	60.00	58.00	61.00
Bordeaux Mixture, drs ...lb.	.11	.11½	.11	.11½	.11	.11½
Bromine, cases ....lb.	.25	.30	.25	.30	.25	.30
Bronze, Al, pwd, 300 lb drs (*FP*) ....lb.	...	.59	...	.59	. .	.57
Gold, blk ....lb.	.60	.65	.60	.65	.60	.65
Butanes, com 16-32° group 3 tks (*PC*) ....lb.	.02½	.03½	.02½	.03½	.02½	.03
Butyl, acetate, norm drs, frt all'd ....lb.	.14½	.168	.14½	.168	.10	.168
tks, frt all'd ....lb.	.13½	.158	.13½	.158	.09	.158
Secondary, tks, frt all'd lb.	...	.08½	...	.08½	.07¼	.08½
drs, frt all'd ....lb.	...	.09½	...	.09½	.08¾	.09½
Aldehyde, 50 gal drs, wks ....lb.	.14½	.16½	.14½	.17½	.15½	.17½
Carbinol, norm (see Normal Amyl Alcohol)						
Chloride, normal						
lcl, drs ....lb.	...	.35	.28	.35	...	...
c-l, drs ....lb.	...	.32	.25	.32	...	...
Crotonate, norm, 55 and 110 gal drs, delv ....lb.	...	.35	...	.35	...	.35
Lactate ....lb.	...	.26½	...	.26½	...	.23½
Oleate, drs, frt all'd ...lb.	...	.25	...	.25	...	.25
Propionate, drs ....lb.	.16½	.17	.16½	.17	.16½	.17
tks, delv ....lb.	...	.15½	...	.15½	. .	.15½
Stearate, 50 gal drs ....lb.	...	.31	...	.31	.28½	.32½
Tartrate, drs ....lb.	no prices		no prices		.55	.60
Butyraldehyde, drs, lcl, wks lb.	...	.35½	...	.35½	...	.35½

C

	Current Market		1942 Low	1942 High	1941 Low	1941 High
Cadmium Metal (*PC*) ...lb.	.90	.95	.90	.95	.80	.95
Sulfide, orange, boxes ..lb.	...	1.10	...	1.10	...	1.10
Calcium, Acetate, 150 lb bgs c-l, delv ....100 lb.	3.00	4.00	3.00	4.00	1.90	4.00
Arsenate, c-l, E of Rockies, dealers, drs ....lb.	.07	.08	.06½	.08	.06	.07½
Carbide, drs ....lb.	...	.04¾	...	.04¾	...	.04¾
Carbonate, tech, 100 lb bgs, c-l ....ton	16.00	20.00	16.00	20.00	16.00	20.00
Chloride, flake, 375 lb drs, burlap bgs, c-l, delv ton	...	21.00	...	21.00	.	20.50
paper bgs, c-l, delv ton	18.50	41.00	18.50	41.00	18.50	35.00
Solid, 650 lb drs, c-l, delv ....ton	18.00	34.50	18.00	34.50	18.00	34.50
Ferrocyanide, 350 lb bbls wks ....lb.	...	.20	...	.20	...	.20
Gluconate, Pharm, 125 lb bbls ....lb.	.52	.59	.52	.59	.52	.59
Levulinate, less than 25 bbl lots, wks ....lb.	...	3.00	...	3.00	...	3.00
Nitrate, 100 lb bgs ....ton	no prices		no prices		no prices	
Palmitate, bbls ....lb.	.28	.29	.28	.29	.22	.29
Phosphate, tribasic, tech, 450 lb bbls ....lb.	.0635	.0705	.0635	.0705	.0635	.0705
Resinate, precip, bbls ..lb.	.15	.16	.13	.16	.13	.14
Stearate, 100 lb bbls ...lb.	.26	.27	.26	.27	.20½	.27
Camphor, slabs ....lb.	1.60	1.65	1.60	1.65	.73	1.65
Powder ....lb.	1.60	1.65	1.60	1.65	.63	1.65
Carbon Bisulfide, 500 lb drs lb.	.05	.05¾	.05	.05¾	.05	.05¾
Black, c-l, bgs, f.o.b. plants ....lb.	...	.03625	...	.03625	.03325	.0342
Decolorizing, drs, c-l ..lb.	.08	.15	.08	.15	.08	.15
Dioxide, Liq, 20-25 lb cyl lb.	.06	.08	.06	.08	.06	.08
Tetrachloride, (*FP*) (*PC*) 55 or 110 gal drs, c-l, delv ....lb.	...	.73	...	.73	.66½	.73
Casein, Standard, Dom, grd lb.	...	.15	.15	.30½	.11½	.31
80-100 mesh, c-l bgs ....lb.	...	.16	.15½	.31	.12	.31½
Castor Pomace, 5½ NH_3, c-l, bgs, wks (*PC*) .....ton	...	19.00	16.00	19.00	15.00	16.00
Imported, ship, bgs ...ton	no prices		no prices		no prices	
Celluloid, Scraps, ivory cs lb.	.13	.15	.13	.15	.12	.15
Transparent, cs ....lb.	...	.20	...	.20	...	.20
Cellulose, Acetate, frt all'd, 50 lb kgs ....lb.	...	.30	...	.30	...	.30
Triacetate, flake, frt all'd ....lb.	...	.30	...	.30	...	.30
Chalk, dropped, 175 lb bbls lb.	...	.02⅞	...	.02⅞	.02¾	.02⅞
Precip, heavy, 560 lb cks ....100 lbs.	...	32.50	32.50	32.50	32.50	32.50
Charcoal, Hardwood, lump, blk, wks ....bu.	...	.15	...	.15	...	.15
Softwood, bgs, delv* ..ton	27.50	38.50	25.00	38.50	25.00	36.00
Willow, powd, 100 lb bbls, wks ....lb.	.06	.07	.06	.07	.06	.07
Chestnut, clarified tks, wks lb.	.	.0225	...	.0225	.01¾	.0275
25%, bbls, wks ....lb.	...	.0275	...	.0275	.0240	.0275
China Clay, c-l, blk mines ton	. .	7.60	...	7.60		7.60
Imported, lump, blk ...ton	19.00	24.00	18.60	24.00	18.60	...

j A delivered price; * Depends upon point of delivery.
(*FP*) Full Priority. (*PC*) Price Ceiling.
(A) Allocation

	Current Market		1942 Low	1942 High	1941 Low	1941 High
Chlorine, cyls, lcl, wks, contract (*FP*) (A) ....lb.	...	.07¼	...	.07¼	...	.07¼
cyls, c-l, contract lb. *j*	...	.05¼	...	.05¼	...	.05¼
Liq, tk, wks, contract 100 lb.	...	1.75	...	1.75	...	1.75
Multi, c-l, cyls, wks, cont ....lb.	...	2.00	...	2.00	1.90	2.00
Chloroacetophenone, tins, wks ....lb.	3.00	3.50	3.00	3.50	3.00	3.50
Chlorobenzene, Mono, 100 lb. drs, lcl, wks ....lb.	...	.08	...	.08	.06	.08
Chloroform, tech, 650 lb drs ....lb.	...	.20	...	.20	...	.20
USP, 650 lb drs ....lb.	...	.30	...	.30	...	.30
Chloropicrin, comml cyls ..lb.	...	.80	...	.80	...	.80
Chrome, Green, CP ....lb.	.23	.33	.23	.33	.21	.25
Yellow ....lb.	.16	.17	.16	.17	.13½	.14½
Chromium Acetate, 8% Chrome, bbls ....lb.	.07¾	.08½	.07¾	.08½	.07¾	.08½
Fluoride, powd, 400 lb bbls ....lb.	.27	.28	.27	.28	.27	.28
Coal tar, bbls ....bbl.	8.25	9.25	7.50	9.25	7.50	7.75
Cobalt Acetate, bbls (A) lb.	...	.83¾	...	.83¾	.80½	.83¾
Carbonate tech, bbls (A) lb.	...	1.58	...	1.58	...	1.58
Hydrate, bbls (A) ....lb.	...	2.04	...	2.04	1.98	2.04
Linoleate, solid, bbls ...lb.	...	.44	.42	.44	.33	.42
paste, 5%, drs ....lb.	.32	.35	.31	.35	...	.31
Oxide, black, bgs (A) ..lb.	...	1.84	...	1.84	...	1.84
Resinate, fused, bbls ...lb.	...	.15	.13½	.15	...	.13½
Precipitated, bbls ....lb.	...	.38	.34	.38	...	.34
Cochineal, gray or bk bgs lb.	.37	.38	.37	.38	.37	.38
Teneriffe silver, bgs ...lb.	.38	.39	.38	.39	.38	.39
Copper, metal *FP*, *PC* 100 lb.	12.00	12.50	12.00	12.50	12.00	12.50
Acetate, normal, bbls, delv ....lb.	.24	.26	.24	.26	.22	.26
Carbonate, 52-54% 400 lb bbls ....lb.	.18	.20½	.18	.20½	.1650	.20½
Chloride, 250 lb bbls ..lb.	...	.23¼	.19½	.23¼	.16	.19½
Cyanide, 100 lb drs ....lb.	.34	.38	.34	.38	.34	.38
Oleate, precip, bbls ....lb.	.22	.29½	.20	.29½	...	.20
Oxide, black, bbls, wks lb.	.19½	.21	.19½	.21	.18	.21
red 100 lb bbls ....lb.	.20	.22	.20	.22	.19	.22
Sub-acetate verdigris, 400 lb bbls ....lb.	.18	.19	.18	.19	.18	.19
Sulfate, bbls, c-l, wks, 100 lb.	5.15	5.50	5.15	5.50	4.75	5.50
Copperas crys and sugar bulk c-l, wks ....ton	...	17.00	...	17.00	14.00	17.00
Corn sugar, tanners, bbls 100 lb.	...	3.54	3.54	4.05	3.36	4.05
Corn Syrup, 42°, bbls 100 lb.	...	3.69	3.52	3.69	3.42	3.52
43°, bbls ....100 lb.	...	3.74	3.57	3.74	3.47	3.57
Cotton, Soluble, wet 100 lb bbls ....lb.	.40	.42	.40	.42	.40	.42
Cream Tartar, powd & gran 300 lb bbls ....lb.	...	.57½	...	.57½	.38¼	.57½
Creosote, USP 42 lb cbys lb.	.60	.77	.60	.77	.45	.77
Oil, Grade 1 tks .....gal.	...	.15½	...	.15½	.13½	.15½
Grade 2 ....gal.	.122	.132	.122	.132	.122	.132
Cresol, USP, drs. c-l (A) lb.	.10¾	.11¼	.10¾	.11½	.09¾	.11¼
Crotonaldehyde, 97%, 55 and 110 gal drs, wks ....lb.	...	.15	...	.15	.11	.15
Cutch, Philippine, 100 lb bale lb	no supplies		...	.05¼	.04¾	.05¼
Cyanamid, pulv, bgs, c-l, frt (A) all'd, nitrogen basis, unit	1.52½ nom.		no prices		...	1.40

D

	Current Market		1942 Low	1942 High	1941 Low	1941 High
Derris root 5% rotenone, bbls ....lb.	...	.35	.40	.45	.21	.40
Dextrin, corn, 140 lb bgs f.o.b., Chicago ...100 lb.	...	4.00	...	4.00	3.80	4.00
British Gum, bgs ...100 lb.	...	4.25	...	4.25	4.05	4.25
Potato, Yellow, 220 lb bgs lb.	...	.10	.09½	.10	.08	.08½
White, 220 lb bgs, lcl lb.	.09½	.11¼	.09½	.11¼	.08½	.09
Tapioca, 200 bgs, lcl ..lb.	...	.0715	...	.0715	...	.0715
White, 140 lb bgs ..100 lb.	...	3.95	...	3.95	3.75	3.95
Diamylamine, c-l, drs, wks lb.	...	.61	.50	.61	.47	.50
lcl drs, wks ....lb.	...	.64	.53	.64	.48	.53
Diamylene, drs, wks .....lb.	...	.105	...	.105	.095	.105
lcl, drs ....lb.	...	.112	...	.112	...	...
tks, wks ....lb.	...	.09½	...	.09½	.08½	.09½
Diamylether ....lb.	...	...	...	...	.085	.102
lcl, drs ....lb.	...	.112	.102	.112	...	...
c-l, drs ....lb.	...	.105	.095	.105	...	...
tks ....lb.	...	.095	.085	.095	...	...
Diamylnaphthalene, lcl, drs, f.o.b. wks ....lb.	...	.17	...	.17	.17	.20
Diamylphenol, lcl, drs ....lb.	...	.21	...	.21	...	...
Diamylphthalate, drs, wks lb.	...	.22	.21	.22	.21	.21½
Diamyl Sulfide, drs, lcl ..lb.	...	.25	...	.25	...	...
Diatomaceous Earth, see Kieselguhr.						
Dibutoxy Ethyl Phthalate, drs, wks ....lb.	...	.35	...	.35	...	.35
Dibutylamine, lcl, drs, wks lb.	...	.64	.53	.64	...	.53
c-l, drs, wks ....lb.	...	.61	.50	.61	...	.50
tks, wks ....lb.	...	.59	.48	.59	...	.48
Dibutyl Ether, drs, wks, lcl lb.	.26	.28	.26	.28	.25	.28
Dibutylphthalate, drs, wks, frt all'd ....lb.	.21	.23½	.21	.23½	.19	.20
Dibutyltartrate, 50 gal drs lb.	...	.92	.87	.92	.50	.87
Dichlorethylene, drs .....lb.	...	.25	...	.25	...	.25
Dichloroethylether, 50 gal drs, wks ....lb.	.15	.16	.15	.16	.15	.16
tks, wks ....lb.	...	.14	...	.14	...	.14
Dichloromethane, drs, wks lb.	...	.23	...	.23	...	.23
Dichloropentanes, c-l, drs lb.	...	.037	...	.037	.025	.04
lcl, drs ....lb.	...	.045	...	.045	...	...
tks, wks ....lb.	...	.03	...	.03	.0221	.025

* These prices were on a delivered basis.

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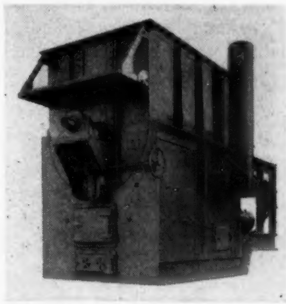

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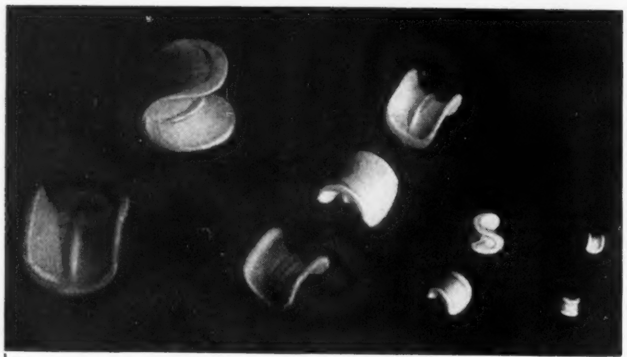

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	Current Market		1942 Low	1942 High	1941 Low	1941 High
Diethanolamine, tks ,wks lb.	...	.22½	...	.22½	...	.22½
Diethylamine, 300 lb drs, lcl, f.o.b., wks ....lb.	...	.81	.70	.81	...	.70
Diethylamino Ethanol, lcl, drs, f.o.b. Wyandotte, frt all'd E. Miss ....lb.	...	.85	.75	.85	...	.75
Diethylaniline, 850 lb drs lb.	...	.40	...	.40	...	.40
Diethylcarbonate, com drs lb.	...	.25	...	.25	...	.25
Diethylorthotoluidin, drs .lb.	.64	.67	.64	.67	.64	.67
Diethylphthalate, c-l, drs ..lb.	...	.22	.21½	.22	.19	.20
Diethylsulfate, tech, drs, wks, lcl ....lb.	.13	.14	.13	.14	.13	.14
Diethyleneglycol, drs ....lb.	.14	.15½	.14	.15½	.14	.15½
Mono ethyl ether, drs ..lb.	.14½	.15½	.14½	.15½	.14½	.15½
tks, wks ....lb.	...	.13½	...	.13½	...	.13½
Mono butyl ether, drs ..lb.	.22½	.24½	.22½	.24½	.22½	.24½
tks, wks ....lb.	...	.22	...	.22	...	.22
Diethylene oxide, 50 gal drs, wks ....lb.	.20	.24	.20	.24	.20	.24
Diglycol Laurate, bbls ...lb.	.31	.33	.16	.33	...	.16
Oleate, bbls ....lb.	...	.17	...	.17	...	.17
Stearate, bbls ....lb.	...	.22	...	.22	...	.22
Dimethylamine, 400 lb drs, pure 25 & 40% sol 100% basis ....lb.	.85	.90	.85	.90	.85	1.05
Dimethylaniline, 240 lb drs lb.	.23	.24	.23	.24	.23	.24
Dimethyl phthalate, drs, wks, frt all'd ....lb.	...	.20	...	.20	.18½	.20
Dimethylsulfate, 100 lb drs lb.	.45	.50	.45	.50	.45	.50
Dinitrobenzene, 400 lb bbls lb.	...	.18	...	.18	...	.18
Dinitrochlorobenzene, 400 lb bbls ....lb.	...	.14	...	.14	...	.14
Dinitronaphthalene, 350 lb bbls ....lb.	.35	.38	.35	.38	.35	.38
Dinitrophenol, 350 lb bbls lb.	...	.22	...	.22	...	.22
Dinitrotoluene, 300 lb bbls lb.	...	.18	...	.18	.15½	.18
Diphenyl, bbls ....lb.	...	.15	...	.15	.15	.20
Diphenylamine (A) ....lb.	...	.25	...	.25	...	.25
Diphenylguanidine, 100 lb drs ....lb.	.35	.37	.35	.37	.35	.37
Dip Oil, see Tar Acid Oil.						
Divi Divi pods, bgs shipmt ton	...	80.00	55.00	80.00	32.00	52.00
Extract ....lb.	.05¾	.06¼	.05¾	.06¼	.05¾	.06¼
Drymet (see sodium metasilicate anhydrous).						
E						
Egg Yolk, dom., 200 lb. cases lb.	.87	.92	.87	1.05	.60	1.05
Epsom Salt, tech, 300 lb bbls c-l, NY .....100 lb.	...	1.90	...	1.90	...	1.90
USP, c-l, bbls .....100 lb.	...	2.10	...	2.10	...	2.10
Ether, USP anaesthesia 55 lb drs ....lb.	.60	.61	.52	.61	.26	.53
Isopropyl 50 gal drs ...lb.	.07	.08	.07	.08	.07	.08
tks, frt all'd ....lb.	...	.06	...	.06	...	.06
Nitrous conc bottles ...lb.	.93	1.10	.73	1.10	...	.73
Synthetic, wks, tks .....lb.	...	.12½	.08	.12½	.08	.09
Ethyl Acetate, 85% Ester tks, frt all'd ....lb.	.11	.12	.11	.12	.06½	.12
drs, frt all'd ....lb.	.12	.13	.12	.13	.07½	.13
99%, tks, frt all'd ...lb.	.11¼	.12¼	.11¼	.12¼	.06¾	.12¼
drs, frt all'd ....lb.	.12¼	.13¼	.12¼	.13¼	.07¾	.13¼
Acetoacetate, 110 gal drs lb.	...	.37½	...	.37½	.27½	.37½
Benzylaniline, 300 lb drs lb.	.86	.88	.86	.88	.86	.88
Bromide, tech drs .....lb.	.50	.55	.50	.55	.50	.55
Cellulose, drs, wks, frt all'd ....lb.	.50	.60	.50	.60	.45	.50
Chloride, 200 lb drs ....lb.	.18	.20	.18	.20	.18	.20
Chlorocarbonate, cbys ..lb.	...	.30	...	.30	...	.30
Crotonate, drs ....lb.	...	.35	...	.35	...	.35
Formate, drs, frt all'd ..lb.	...	.27¾	...	.27¾	.25	.27¾
Lactate, drs, wks ......lb.	...	.33½	...	.33½	...	.33½
Oxalate, drs, wks ......lb.	...	.33	...	.33	.25	.33
Silicate, drs, wks ......lb.	...	.77	...	.77	...	.77
Ethylene Dibromide, 60 lb drs ....lb.	.65	.70	.65	.70	.65	.70
Chlorhydrin, 40%, 10 gal cbys chloro, cont ....lb.	.75	.85	.75	.85	.75	.85
Anhydrous ....lb.	...	.75	...	.75	...	.75
Dichloride, (*FP*) 50 gal drs, E. Rockies ....lb.	...	.0742	...	.0742	.0693	.0746
Glycol, 50 gal drs, wks..lb.	...	.15½	.14½	.18½	.14½	.18½
tks, wks ....lb.	...	.14½	.13½	.14½	...	.13½
Mono Butyl Ether, drs, wks ....lb.	.16½	.17½	.16½	.17½	.16½	.17½
tks, wks ....lb.	...	.15½	...	.15½	...	.15½
Mono Ethyl Ether, drs wks ....lb.	.14½	.15½	.14½	.15½	.14½	.15½
tks, wks ....lb.	...	.13½	...	.13½	...	.13½
Mono Ethyl Ether Acetate, drs, wks .....lb.	.11½	.12½	.11½	.12½	.11½	.12½
tks, wks ....lb.	...	.10½	...	.10½	...	.10½
Mono Methyl Ether, drs wks ....lb.	.15½	.16½	.15½	.16½	.15½	.16½
tks, wks ....lb.	...	.14½	...	.14½	...	.14½
Oxide, cyl ....lb.	.50	.55	.50	.55	.50	.55
Ethylideneaniline ....lb.	.45	.47½	.45	.47½	.45	.47½
F						
Feldspar, blk pottery ....ton	17.00	19.00	17.00	19.00	17.00	19.00
Powd, blk wks ....ton	14.00	17.50	14.00	17.50	14.00	17.50
Ferric Chloride, tech, crys, 475 lb bbls ....lb.	.05	.07½	.05	.07½	.05	.07½
sol, 42° cbys ....lb.	.06½	.07	.06½	.07	.06½	.07

l + 10; *m* + 50; * Bbls. are 20c higher.
FP Full Priority. *PC* Price Ceiling. (A) Allocation

Current

	Current Market		1942 Low	1942 High	1941 Low	1941 High
Fish Scrap, dried, unground wks (*PC*) .... unit *l*	...	5.00	4.75	4.85	4.35	4.85
Acid, Bulk, 6 & 3%, delv Norfolk & Baltimore basis ...... unit *m*	nominal		**2.75**	**3.25**	**2.75**	**3.25**
Fluorspar, 98% bgs (*PC*) ton	28.00	32.00	28.00	34.00	29.00	34.00
Formaldehyde, c-l, bbls, wks (*FP, PC*) .... lb.	.055	.0575	.055	.0575	...	...
Fossil Flour .... lb.	.02½	.04	.02½	.04	.02½	.04¼
Fullers Earth, blk, mines ton	8.50	15.00	8.50	15.00	8.50	15.00
Imp powd, c-l, bgs .... ton	30.00	40.00	30.00	40.00	no prices	
Furfural (tech) drs, wks lb.	.15	.20	.15	.20	.10	.15
tks, wks .... lb.	...	.09	...	.09	...	.09
Furfuramide (tech) 100 lb drs .... lb.	...	.30	...	.30	...	.30
Fusel Oil, 10% impurities lb.	.18	.18½	.18	.18½	.16	.19½
Fustic, crystals, 100 lb boxes .... lb.	.28	.32	.28	.32	.24	.32
Liquid 50°, 600 lb bbls lb.	.12½	.16	.12½	.16	.10½	.16
Solid, 50 lb boxes ..... lb.	.19	.21	.19	.21	.19	.21
G						
G Salt paste, 360 lb bbls .. lb.	...	.45	...	.45	...	.45
Gambier, com 200 lb bgs lb.	no prices		...	.09½	.06½	.09½
Singapore cubes, 150 lb bgs .... 100 lb.	.30	nom.	.12½	.30	.08¼	.11
Glauber's Salt, tech, c-l, bgs, wks .... 100 lb.	1.05	1.28	1.05	1.28	.95	1.28
Anhydrous, see Sodium Sulfate						
Glue, bone, com grades, c-l bgs .... lb.	.15½	.18½	.15½	.18½	.13½	.18½
Better grades, c-l, bgs lb.	.19	.30	.19	.30	.15	.30
Glycerin (*PC*) CP, drs ... lb.	...	.18¼	...	.18¼	.14½	.19½
Dynamite, 100 lb drs ... lb.	...	.18¼	...	.18¼	...	.18¼
Saponification, drs ..... lb.	...	.12¾	...	.12¾	.09½	.20½
Soap Lye, drs .... lb.	...	.11½	...	.11½	.07⅛	.18
Glyceryl Bori-Borate, bbls lb.	...	.40	...	.40	...	.40
Monoricinoleate, bbls ... lb.	...	.27	...	.27	...	.27
Monostearate, bbls ..... lb.	...	.30	...	.30	...	.30
Oleate, bbls .... lb.	...	.22	...	.22	...	.22
Phthalate .... lb.	...	.38	...	.38	...	.38
Glyceryl Stearate, bbls ... lb.	...	.18	...	.18	...	.18
Glycol Bori-Borate, bbls .. lb.	...	.22	...	.22	...	.22
Phthalate, drs .... lb.	...	.38	...	.38	...	.38
Stearate, drs .... lb.	...	.26	...	.26	...	.26
GUMS						
Gum Aloes, Barbadoes ... lb.	.80	.85	.80	.85	.80	.95
Arabic, amber sorts .... lb.	.19	.19½	.18½	.24	.14	.25
White sorts, No. 1, bgs lb.	.33	.35	.33	.35	.35	.45
Powd, bbls .... lb.	.24	.26	.24	.28	.18	.30
Asphaltum, Barbadoes (Manjak) 200 lb bgs, f.o.b. NY .... lb.	.04½	.12	.04½	.12	.04½	.05½
California, f.o.b. NY, drs ton	35.00	40.00	20.00	40.00	20.00	36.50
Egyptian, 200 lb cases, f.o.b. NY .... lb.	.12	.15	.12	.15	.12	.15
Benzoin Sumatra, USP, 120 lb cases .... lb.	.50	.55	.45	.55	.19	.50
Copal, Congo, 112 lb bgs, clean, opaque .... lb.	...	.49½	...	.49½	...	.49½
Dark amber .... lb.	...	.12¾	...	.12¾	...	.12¾
Light amber .... lb.	...	.17	...	.17	...	.17
Copal, East India, 180 lb bgs						
Macassar pale bold .... lb.	...	.17⅜	...	.17⅜	.12¾	.17⅜
Chips .... lb.	...	.11½	...	.11½	.06¾	.11½
Dust .... lb.	...	.07	...	.07	.05¼	.07
Nubs .... lb.	...	.13⅜	...	.13⅜	.10½	.13⅜
Singapore, Bold .... lb.	...	.22⅜	...	.22⅜	.15¾	.22⅜
Chips .... lb.	...	.12⅜	...	.12⅜	.08½	.12⅜
Dust .... lb.	...	.07	...	.07	.05¼	.07
Nubs .... lb.	...	.17¾	...	.17¾	.11	.17¾
Copal Manila, 180-190 lb. (A)	...	.14½	.14	.14½	.13⅞	.14
Loba B .... lb.	...	.13¾	.13¾	.14¼	.11¾	.14¼
Loba C .... lb.	...	.13⅜	.13⅜	.13⅞	.11¼	.13⅞
DBB .... lb.	...	.11	.11	.12¼	.10	.12¼
MA sorts .... lb.	...	.09¾	.09¾	.10¼	.07¾	.10¼
Copal Pontianak, 224 lb cases, bold gen. (A) lb.	...	.22⅜	.22⅜	.22⅞	.15⅜	.22⅞
Chips .... lb.	...	.12⅜	.12⅜	.14½	.10	.14½
Mixed .... lb.	...	.17⅜	.17⅜	.17⅞	.14⅜	.17⅞
Nubs .... lb.	...	.18⅜	.18⅜	.18⅞	.12¾	.18⅞
Split .... lb.	...	.19⅛	.19⅛	.19⅝	.13¾	.19⅝
Damar Batavia, 136 lb **cases** (A)						
A .... lb.	...	.35¾	...	.35¾	.21⅝	.35¾
B .... lb.	...	.34⅜	...	.34⅜	.20¼	.34⅜
C .... lb.	...	.28⅝	...	.28⅝	.14⅝	.28⅝
D .... lb.	...	.25⅝	...	.25⅝	.13¼	.25⅝
A/D .... lb.	...	.28⅜	...	.28⅜	.15¼	.28⅜
A/E .... lb.	...	.25⅝	...	.25⅝	.12⅞	.25⅝
E .... lb.	...	.18¾	...	.18¾	.10	.18¾
F .... lb.	...	.13¾	...	.13¾	.08	.13¾
Singapore, No. 1 ...... lb.	...	.30⅝	...	.30⅝	.16⅝	.30⅝
No. 2 .... lb.	...	.25⅜	...	.25⅜	.12¼	.25⅜
No. 3 .... lb.	...	.12⅜	...	.12⅜	.07⅛	.12⅜
Chips .... lb.	...	.23½	...	.23½	.11	.23½
Dust .... lb.	...	.13	...	.13	.07⅛	.13
Seeds .... lb.	...	.17¾	...	.17¾	.09⅞	.17¾
Elemi, cns, c-l (A) ...... lb.	...	.08⅞	...	.08⅞	.08½	.08⅞
Ester .... lb.	...	.09½	.08½	.09½	.06¼	.09½
Gamboge, pipe, cases .... lb.	2.30	2.35	.95	2.35	.95	1.00
Powd, bbls .... lb.	2.50	2.55	1.05	2.55	1.05	1.10
Ghatti, sol, bgs .... lb.	.11	.15	.11	.15	.11	.15
Karaya, bbls, bxs, drs ... lb.	.14	.33	.14	.33	.14	.33

***FP* Full Priority. *PC* Price Ceiling.** (A) Allocation

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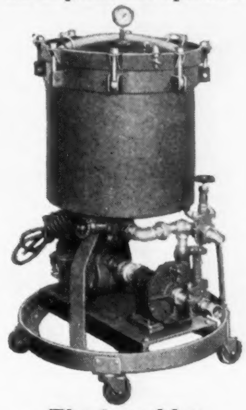

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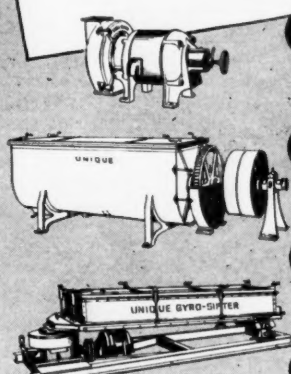

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BLDG. 9, BUSH TERMINAL — BROOKLYN, N.Y.

	Current Market		1942 Low	1942 High	1941 Low	1941 High
Kauri, N Y (A)						
Brown XXX, cases ....lb.	...	.77	.60	.77	...	.60
BX ....lb.	...	.38	.	.38	...	.38
B1 ....lb.	...	.34	.28	.34	...	.28
B2 ....lb.	...	.30	.24	.30	...	.24
B3 ....lb.	...	.27½	.18½	.27½	...	.18½
Pale XXX ....lb.	...	.66	.61	.66	...	.61
No. 1 ....lb.	...	.43	.41	.43	...	.41
No. 2 ....lb.	...	.31	.24	.31	...	.24
No. 3 ....lb.	...	.22	.17¾	.22	...	.17¾
Kino, tins ....lb.	no prices		no prices		no prices	
Mastic ....lb.	3.25	3.30	3.25	3.30	1.50	3.30
Sandarac, prime quality, 200 lb bgs & 300 lb cks ..lb.	.95	.97½	.95	1.10	.50	1.10
Senegal, picked bgs ......lb.	...	.30	...	.30	...	.30
Sorts ....lb.	...	.13	...	.13	...	.13
Thus, bbls ....280 lbs.	...	16.50	...	16.50	15.00	16.50
Tragacanth, No. 1, cases ..lb.	3.75	4.00	3.50	4.00	2.75	3.40
No. 2 ....lb.	2.00	3.00	2.00	3.00	2.45	2.80
No. 3 ....lb.	1.10	1.20	1.10	1.20	1.10	2.60
Yacca, bgs (PC) ....lb.	.06	.07½	.06	.07¾	.03½	.07¾
H						
Hematine crys, 400 lb bbls lb.	.24	.34	.24	.34	.20	.34
Hemlock, 25%, 600 lb bbls						
wks ....lb.	...	.0385	.03½	.0385	.03⅛	.03½
tks ....lb.	...	.0325	.03	.0325	.02¾	.03
Hexalene, 50 gal drs, wks lb.	...	.23	...	.23	.23	.30
Hexane, normal 60-70° C. Group 3, tks (PC) ..gal.	...	.11	...	.11	.09¾	.11
Hexamethylenetetramine, powd, drs (FP) .....lb.	.32	.33	.32	.33	.32	.33
Hexyl Acetate, secondary, delv, drs ....lb.	.13	.13½	.13	.13½	.13	.13½
tks ....lb.	...	.12	...	.12	...	.12
Hoof Meal, f.o.b. Chicago unit	4.00	4.50	3.00	4.50	2.65	3.05
Hydrogen Peroxide, 100 vol, 140 lb cbys ....lb.	.16	.18½	.16	.18½	.16	.18½
Hydroxylamine Hydrochloride ....lb.	...	3.15	...	3.15	...	3.15
Hypernic, Bags, No. 1 ...lb.	...	.42	...	.42	.40	.42
I						
Indigo, Bengal, bbls .....lb.	2.14	2.20	2.14	2.20	1.63	2.20
Synthetic, liquid ......lb.	.16½	.19	.16½	.19	.16½	.19
Iodine, Resublimed, jars ..lb.	...	2.00	...	2.00	...	2.00
Irish Moss, ord, bales ...lb.	.37	.42½	.30	.42½	.25	.31
Bleached, prime, bales ..lb.	.80	.85	.80	.85	.32	.46
Iron Acetate Liq. 17°, bbls delv ....lb.	.03	.04	.03	.04	.03	.04
Chloride see Ferric Chloride						
Nitrate, coml, bbls ..100 lb.	3.50	4.00	3.50	4.00	3.50	4.00
Isobutyl Carbinol (128-132°C) drs, f.o.b. Wyandotte, Mich. ....lb.	...	.23½	...	.23½	.22½	.23½
tks, ...lb.	...	.21½	...	.21½	...	.21½
Isopropyl Acetate, tks, frt all'd ....lb.	...	.10	.076	.10	.06½	.07½
drs, frt all'd, c-l .....lb.	...	.12	.086	.12	.07½	.08½
Ether, see Ether, isopropyl						
K						
Keiselguhr, dom bags, c-l, Pacific Coast ....ton	22.00	25.00	22.00	25.00	22.00	25.00
L						
Lead Acetate, f.o.b. NY, bbls, (PC)						
White, broken ....lb.	...	.12½	.12	.13¼	.11	.12½
cryst, bbls ....lb.	...	.12½	.12	.13¼	.11	.12½
gran, bbls ....lb.	...	.13¼	.12¾	.14	.11¾	.13¼
powd, bbls ....lb.	...	.13¼	.12¾	.14	.11¾	.13¼
Arsenate, East, drs ....lb.	.11	.12	.11	.12	.09	.11
Linoleate, solid, bbls ...lb.	...	.22½	.19	.22½	...	.19
Metal, c-l, NY (FP) 100 lb.	5.85	5.90	5.85	5.90	5.70	5.90
Nitrate, 500 lb bbls, wks lb.	.11	.14	.11	.14	.11	.14
Oleate, bbls ....lb.	...	.17¾	.17¾	.20	.18½	.20
Red, dry, 95% Pb_3O_4, delv ....lb.	...	.09	...	.09	.08	.08¾
97% Pb_3O_4, delv ....lb.	...	.09¼	...	.09¼	.084	.086
98% Pb_3O_4, delv ....lb.	...	.09½	...	.09½	.0865	.0885
Resinate, fused, bbls ...lb.	.10	.12	.09½	.12	.09½	.16½
Stearate, bbls ....lb.	...	.25	...	.25	...	.25
Titanate, bbls, c-l, f.o.b. wks, frt all'd ....lb.	...	.10¼	...	.10¼	...	.10¼
White, 500 lb bbls, wks, lb.	...	.07½	...	.07½	...	.07½
Basic sulfate, 500 lb bbls, wks ....lb.	...	.07½	.06314	.07½	.06½	.07
Lecithin, ed, dms, cl ....lb.	...	.34	...	...	...	...
tech, dms, cl ....lb.	...	.28	...	...	...	...
Lime, chemical quicklime, f.o.b. wks, bulk ...ton	7.00	13.00	7.00	13.00	7.00	13.00
Hydrated, f.o.b. wks ton	8.50	16.00	8.50	16.00	8.50	16.00
Lime Salts, see Calcium Salts						
Lime, sulfur, dealers, tks gal.	no prices		.07½	.08½	...	.07½
drs ...gal.	no prices		.10	.14	.10	.14
Linseed Meal, bgs ...ton	...	34.00	33.50	34.00	23.00	33.00
Litharge, coml, delv, bbls lb.	...	.08	.079	.08	.07	.0760
Lithopone, dom, ordinary, (PC). delv, bgs .....lb.	...	.04¼	...	.04¼	.0385	.04¼
bbls ....lb.	...	.04½	...	.04½	.041	.04½
Titanated, bgs ....lb.	...	.056	...	.056	.05¼	.056
bbls ....lb.	...	.0585	...	.0585	.05½	.0585
Logwood, 51°, 600 lb bbls lb.	...	.13	...	.13	.10½	.13
Solid, 50 lb boxes ...lb.		.22		.22	.16½	.22

(FP) Full Priority. (PC) Price Ceiling. (A) Allocation

	Current Market		1942 Low	1942 High	1941 Low	1941 High
M						
Madder, Dutch ....lb.	.24	.30	.22	.30	.22	.25
Magnesite, calc, 500 lb bbls ton	83.00	88.00	74.00	88.00	65.00	80.00
Magnesium Carb, tech, 70 lb bgs, wks ....lb.	...	.06¼	...	.06¼	...	.06¼
Chloride flake, 375 lb bbls, c-l, wks ....ton	...	32.00	...	32.00	...	32.00
Metal, Ingots, c-l ......lb.	...	.27	...	.27	...	...
Oxide, calc tech, heavy bbls, frt all'd ....lb.	...	.26	...	.26	...	.26
Light bbls above basis lb.	...	.26	...	.26	...	.26
USP Heavy, bbls, above basis ....lb.	...	.26	...	.26	...	.26
Palmitate, bbls ....lb.	.33	.35	.33	.35	.33	.35
Silicofluoride, bbls ....lb.	.18	.20	.18	.25	.11	.25
Stearate, bbls ....lb.	.31	.32	.31	.33	.23	.31
Manganese, acetate, drs ..lb.	...	.26½	...	.26½	...	.26½
Borate, 30%, 200 lb bbls lb.	.15	.17	.15	.17	.15	.16
Chloride, bbls ....lb.	.14	nom.	.14	nom.	...	.14
Dioxide, tech (peroxide), paper bgs, c-l ....ton	...	74.75	70.00	74.75	...	71.50
Hydrate, bbls ....lb.	...	.82		.82		.82
Linoleate, liq. drs ......lb.	...	.20	.18	.20	.18	.19½
solid, precip, bbls .....lb.	...	.22	.19	.22	....	.19
Resinate, fused bbls ...lb.	.09	.10½	.08¼	.10½	.08¼	.08½
precip, drs ....lb.	.14½	.15½	.12	.15½	...	.12
Sulfate, tech, anhyd, 90-95%, 550 lb drs ....lb.	...	.11¼	.10½	.11½	.10½	.11½
Mangrove, 55%, 400 lb bbls lb.						
Bark, African ....ton	no prices		no prices		34.00	38.00
Mannitol, pure cryst, cs, wks lb.	...	.85	...	.85	.85	.90
commercial grd, 250 lb bbls ....lb.	...	.40	...	.40	.35	.45
Marble Flour, blk ......ton	12.50	14.50	12.50	14.50	12.00	14.50
Mercury chloride (Calomel) lb.	...	2.95	...	2.95	2.70	2.95
Mercury metal ..76 lb. flasks	191.00	193.00	191.00	210.00	167.00	215.00
Mesityl Oxide, f.o.b. dest, tks ....lb.	..	.10½		.10½	.10½	.15
drs, c-l ....lb.	...	.12½	.11½	.12½	.11½	.16
drs, lcl ....lb.	...	.13	.12	.13	.12	.16½
Meta-nitro-aniline ....lb.	.67	.69	.67	.69	.67	.69
Meta-nitro-paratoluidine 200 lb bbls ....lb.	1.05	1.10	1.05	1.10	1.05	1.10
Meta-phenylene diamine 300 lb bbls ....lb.	...	.65	...	.65	...	.65
Meta-toluene-diamine 300 lb bbls ....lb.	...	.70	...	.70	.65	.70
Methanol, denat, grd, drs, c-l frt all'd (*PC*) gal.	...	.66	...	.66	.60	.66
tks, frt all'd ......gal.	...	.60	...	.60	...	.60
Pure, nat, drs, c-l, frt all'd ....gal. *a*	.55½	.61½	.55½	.61½	.35½	.55½
tks, nat ....gal. *a*	.50	.54½	.50	.54½	.30	.50
Synth, pure, drs ....gal. *b*	.34½	.40½	.34½	.40½	...	...
tks, synth ....gal. *b*	.28	.32½	.28	.32½	...	...
Methyl Acetate, tech tks, delv ....lb.	.06	.07	.06	.07	.06	.07
55 gal drs, delv ......lb.	.11	.12½	.11	.12½	.07	.12½
C.P. 97-99%, tks, delv lb.	.09½	.10½	.09½	.10½	.09½	.10½
55 gal drs, delv ......lb.	.10½	.13	.10½	.13	.10½	.13
Acetone, frt all'd, drs gal. *p*	...	.81	...	.81	.37½	.81
tks, frt all'd ......gal. *p*	...	.75	...	.75	.32	.75
Synthetic, frt, all'd, drs ....gal. *p*	.51	.54½	.51	.54½	.37½	.51
tks, frt all'd ...gal.	.43	.45½	.43	.45½	.32	.43
Anthraquinone ....lb.	...	.83	...	.83	...	.83
Butyl Ketone, tks ....lb.	...	.10½	...	.10½	...	.10½
Cellulose, 100 lb. lots, frt all'd ....lb.	.50	.55	.50	.55	...	.55
less than 100 lbs. f.o.b. wks ....lb.	...	.60	...	.60	...	.60
Chloride, 90 lb. cyl ....lb.	.32	.40	.32	.40	.32	.40
Ethyl Ketone, tks, frt all'd lb.	...	.08	...	.08	.06	.08
50 gal drs, frt all'd, c-l lb.	...	.09½	...	.09½	.07	.09½
Formate, drs, frt all'd ..lb.	...	.89	...	.89	...	.89
Hexyl, Ketone, pure, drs lb.	...	.60	...	.60	...	.60
Lactate, drs, frt all'd ...lb.	...	.70	...	.70	.70	.80
Mica, dry grd, bgs, wks ..ton	...	30.00	...	30.00	...	30.00
Michler's Ketone, kgs ....lb.	...	2.50	...	2.50	...	2.50
Mixed Amylnaphthalenes mixed, ref., l-c-l, drs, f.o.b. wks ....lb.	...	.16	...	.16	.16	.19
crude ....lb.	...	.14	...	.14	.14	.15
Monoamylamine, c-l, drs, wks lb.	...	.61	.50	.61	.50	.52
lcl, drs, wks on (100% basis) ....lb.	...	.64	...	.64	...	.55
Monoamylnaphthalene, l-c-l, drs, f.o.b. wks ....lb.	...	.17	...	.17	.17	.20
Monobutylamine, drs (100% basis) c-l, wks ....lb.	...	.48	.40	.48	...	.40
l-c-l, wks ....lb.	...	.51	.51	.64	...	.48
Monochlorobenzene, see "C"						
Monoethanolamine, tks, wks, lb.	...	.23	...	.23	...	.23
Monoethylamine (100% basis) lcl, drs, f.o.b. wks ......lb.	...	.46	...	.46	.35	.65
Monomethylamine, drs, frt all'd, E. Mississippi, c-l lb.	...	.65	...	.65	...	.65
Monomethylparamiosulfate, 100 lb drs ....lb.	3.75	4.00	3.75	4.00	3.75	4.00
Morpholine, drs 55 gal, wks ....lb.	...	.67	...	.67	...	.67

a Producers of natural methanol divided into two groups and prices vary for these two divisions; *b* Country is divided in 4 zones, prices varying by zone; *p* Country is divided into 4 zones.

(*FP*) Full Priority. (*PC*) Price Control.

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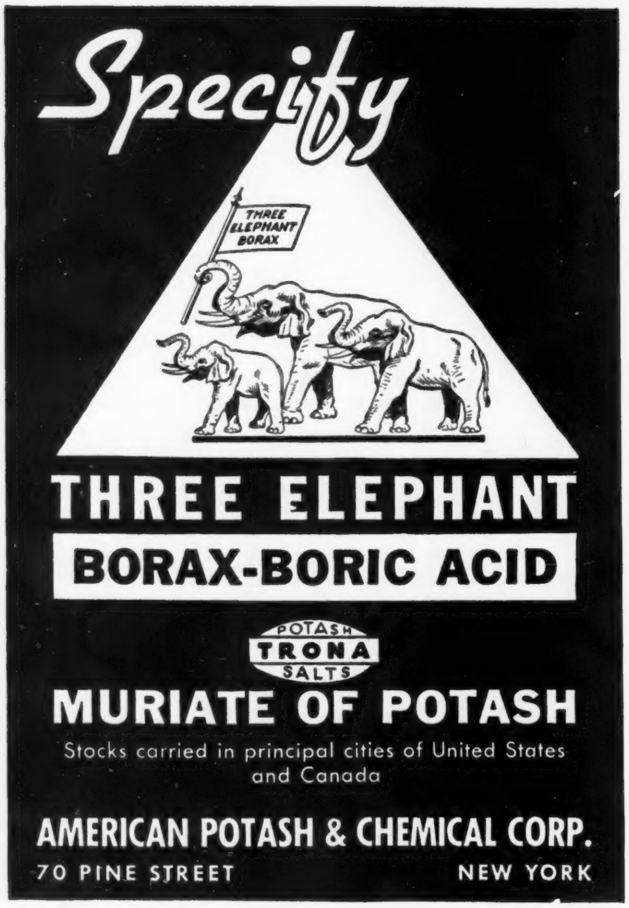

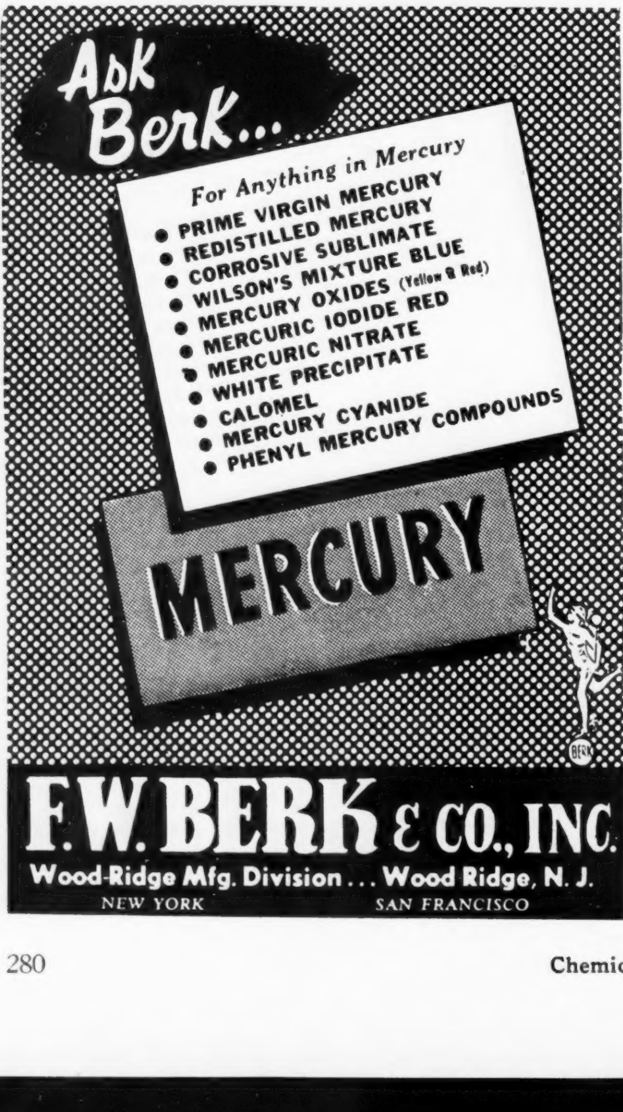

Prices

	Current	Market	1942 Low	1942 High	1941 Low	1941 High
Myrobalans 25%, liq bbls lb.	no prices		no prices		no prices	
50% Solid, 50 lb boxes lb.	no prices		no prices		no prices	
J1 bgs ....ton	no prices		no prices		35.00	48.00
J2 bgs ....ton	no prices		no prices		28.00	39.00
N						
Naphtha, v.m.&p. (deodorized) see petroleum solvents.						
Naphtha, Solvent, water-white, tks ....gal.	...	.27	...	.27	...	.26
drs, c-l ....gal.	...	.31	...	.31	...	.31
Naphthalene, dom, crude bgs. wks ....lb.	2.75	3.00	2.50	3.00	2.25	2.75
Balls, flakes, pks ....lb.	...	.08	...	.08	.06¼	.08
Balls, ref'd bbls, wks ..lb.	...	.08	...	.08	.07	.08
Flakes, re'd, bbls, wks .lb.	...	.08	...	.08	.07	.08
Nickel Carbonate, bbls (A) lb.	.36	.36½	.36	.36½	.36	.36½
Chloride, bbls ....lb.	.18	.20	.18	.20	.18	.20
Metal ingot ....lb.	.35	.36	.35	.36	.34	.36
Oxide, 100 lb kgs, NY .lb.	.35	.38	.35	.38	.35	.38
Salt, 400 lb bbls, NY ..lb.	.13	.13½	.13	.13½	.13	.13½
Nicotine, sulfate, 40%, drs, 55 lb drs ....lb.	...	.703	...	.703	...	.703
Nitre Cake, blk ....ton	...	16.00	...	16.00	...	16.00
Nitrobenzene redistilled, 1000 lb drs, wks ....lb.	.08	.09	.08	.09	.08	.09
tks ....lb.	...	.07	...	.07	...	.07
Nitrocellulose, c-l, lcl, wks lb.	.20	.29	.20	.29	.20	.29
Nitrogen Sol. 45½% ammon, f.o.b. Atlantic & Gulf ports, tks, unit ton, N basis	...	1.2158	...	1.2158	...	1.2158
Nitrogenous Mat'l, bgs imp unit	no prices		no prices		no prices	
dom, Eastern wks ...unit	...	3.00	2.75	3.50	2.20	3.00
dom, Western wks ...unit	...	2.50	2.60	3.35	1.75	2.60
Nitronaphthalene, 550 lb bbls lb.	.24	.25	.24	.25	.24	.25
Nutgalls Alleppo, bgs ....lb.	no prices		no prices		.26	.29
O						
Oak Bark Extract, 25%, bbls lb.	.0385	...	.03½	.03¾	.03⅛	.03¾
tks ....lb.	...	.0325	.02	.0325	.02¾	.03
Octyl Acetate, tks, wks ..lb.	...	.15	...	.15	...	.15
Orange-Mineral, 1100 lb cks NY .... lb.	...	.12	...	.12	.11	.11½
Orthoaminophenol, 50 lb kgs lb.	2.15	2.25	2.15	2.25	2.15	2.25
Ortho amyl phenol, l-c-l, drs, f.o.b. wks ....lb.	...	.25	...	.25	.15	.25
Orthoanisidine, 100 lb drs lb.	...	.70	...	.70	...	.70
Orthochlorophenol, drs ..lb.	...	.32	...	.32	...	.32
Orthocresol, 30.4°, drs, wks (A) ....lb.	.17	.17½	.17	.17½	.16	.17½
Orthodichlorobenzene, 1000 lb drs .... lb.	.06	.07½	.06	.07½	.06	.07½
Orthonitrochlorobenzene, 1200 lb drs, wks ....lb.	.15	.16	.15	.18	.15	.18
Orthonitroparachlorphenol, tins ....lb.	...	.75	...	.75	...	.75
Orthonitrophenol, 350 lb drs ....lb.	.85	.90	.85	.90	.85	.90
Orthonitrotoluene, 1000 lb drs, wks ....lb.	...	.09	...	.09	...	.09
Orthotoluidine, 350 lb bbls, lcl ....lb.	...	.19	...	.19	...	.19
Osage Orange, cryst, bbls lb.	...	.23	...	.23	.21	.23
51° liquid ....lb.	...	.10	...	.10	...	.10
P						
Paraffin, rfd, 200 lb bgs (*PC*)						
122-127° M P ....lb.	...	.052	...	.052	.04¼	.057
128-132° M P ....lb.	.056	.0585	.056	.0585	.057	.0595
133-137° M P .... lb.	.0615	.0640	.0615	.0640	.06¼	.06½
Para aldehyde, 99%, tech, 55-110 gal drs, wks ..lb.	...	.12	...	.12	.10	.12
Aminoacetanilid, 100 lb kgs .... lb.	...	.85	...	.85	...	.85
Aminohydrochloride, 100 lb kgs ....lb.	1.25	1.30	1.25	1.30	1.25	1.30
Aminophenol, 100 lb kgs lb.	...	1.05	...	1.05	...	1.05
Chlorophenol, drs ..... lb.	...	.32	...	.32	...	.32
Dichlorobenzine 200 lb drs, wks .... lb.	.11	.12	.11	.12	.11	.12
Formaldehyde, drs, wks (*FP*) .... lb.	.23	.24	.23	.24	.23	.24
Nitroacetanilid, 300 lb bbls ....lb.	.45	.52	.45	.52	.45	.52
Nitroaniline, 300 lb bbls, wks ....lb.	...	.45	...	.45	...	.45
Nitrochlorobenzene, 1200 lb drs, wks .... lb.	...	.15	...	.15	...	.15
Nitro-orthotoluidine, 300 lb bbls .... lb.	2.75	2.85	2.75	2.85	2.75	2.85
Nitrophenol, 185 lb bbls lb.	...	.35	...	.35	...	.35
Nitrosodimethylaniline, 120 lb bbls .... lb.	.92	.94	.92	.94	.92	.94
Nitrotoluene, 350 lb bbls lb.	...	.30	...	.30	...	.30
Pentaerythritol, tech, bbls, delv ....lb.	.33½	.35½	.33½	.35½	...	...
Phenylenediamine, 350 lb bbls ....lb.	1.25	1.30	1.25	1.30	1.25	1.30
Toluenesulfonamide, 175 lb. bbls ....lb.	...	.70	...	.70	...	.70
tks, wks ....lb.	...	.31	...	.31	...	.31
Toluenesulfonchloride, 410 lb bbls, wks ....lb.	.20	.22	.20	.22	.20	.22
Toluidine, 350 lb bbls, wks ....lb.	...	.48	...	.48	...	.48

(*FP*) Full Priority. (*PC*) Price Control (A) Allocation

	Current Market		1942		1941	
			Low	High	Low	High
Paris Green, dealers, drs lb.	.24	.26	.24	.26	.23	.25
Pentane, normal, 28-38° C,						
group, 3 tks (*PC*) ..gal.	...	.06½	.06½	.08½	...	.08½
drs, group 3 ....gal.	...	.11	.11½	.16	.11½	.16
Perchlorethylene, 10 lb drs,						
frt all'd (*FP*) ......lb.	.08	.08½	.08	.08½	.08	.08½
Petrolatum, dark amber,						
bbls ....lb.	...	.03¼	...	.03¼	.02¼	.03½
White, lily, bbls ......lb.	...	.05¾	...	.05¾	.04¾	.05¾
White, snow, bbls ...lb.	...	.06½	...	.06½	.05½	.06½
Petroleum Ether, 30-60°,						
group 3, tks ....gal.	...	.16	...	.16	.13½	.16
drs, group 3 ....gal.	...	.18	...	.18	.14½	.18
PETROLEUM SOLVENTS AND DILUENTS						
Cleaners naphthas, group						
3, tks, wks ....gal.	...	.07⅛	..	.07⅛	.07	.07⅛
East Coast, tks, wks gal.	...	.11	.10½	.11	.10	.10½
Lacquer diluents, tks						
East Coast ....gal.	...	.11	..	.11	.09½	.11
Group 3, tks ....gal.	.07⅜	.07½	.07⅜	.08⅛	.06¼	.08⅛
Naphtha, V.M.P., East						
tks, wks ....gal.	...	.11	.10½	.11	.09	.11
Group 3, tks, wks ...gal.	...	.07⅛	...	.07⅛	.06	.07⅛
Petroleum thinner, 43-47,						
East, tks, wks ......gal.	.08¾	.09½	.08¾	.09½	.08¾	.09½
Group 3, tks, wks ...gal.	.06	.07	.06	.07	.05⅞	.07
Rubber Solvents, stand						
grd, East, tks, wks ..gal.	...	.11	.10½	.11	.09½	.10½
Group 3, tks, wks ...gal.	...	.07⅛	...	.07⅛	.06	.07⅛
Stoddard Solvents, East,						
tks, wks ....gal.	...	.09½	...	.09½	.083	.09½
Group 3, wks ......gal.	...	.06⅝	...	.06⅝	.05½	.06⅝
Phenol, 250-100 lb drs ....lb.	...	.12½	.12½	.13	.12	.13¾
tks, wks (*FP*) (A) ....lb.	...	.11½	.11½	.12	.11	.12
Phenyl-Alpha-Naphthylamine,						
100 lb kgs ....lb.	...	1.35	...	1.35	...	1.35
Phenyl Chloride, drs .....lb.	...	.17	...	.17	...	.17
Phenylhydrazine Hydro-chloride, com ....lb.	...	1.75	...	1.75	...	1.50
Phloroglucinol, tech, tins ..lb.	15.00	16.50	15.00	16.50	15.00	16.50
CP, tons ....lb.	20.00	22.00	20.00	22.00	20.00	22.00
Phosphate Rock, f.o.b. mines						
70% basis ....ton	...	2.70	2.40	2.70	2.15	2.40
72% basis ....ton	...	3.20	3.00	3.20	2.50	3.00
Florida Pebble, 68% basis ton	...	2.20	2.00	2.20	1.90	2.00
75-74% basis ....ton	...	4.00		4.00	...	2.90
Tennessee, 72% basis ..ton	...	5.50	5.00	5.50	4.50	5.00
Phosphorus Oxychloride 175						
lb. cyl (*FP*) ....lb.	.15	.18	.15	.18	.15	.18
Red, 110 lb cases ......lb.	.40	.44	.40	.44	.40	.44
Sesquisulfide, 100 lb cs .lb.	.38	.42	.38	.42	.38	.42
Trichloride, cyl ....lb.	.15	.16	.15	.16	.15	.16
Yellow, 110 lb cs, wks lb.	.18	.20	.18	.20	.18	.20
Phthalic Anhydride, 100 lb						
drs, wks (A) ....lb.	.14½	.15½	.14½	.15½	.14½	.15½
Pine Oil, 55 gal drs or bbls						
Destructive dist ....lb.	.72	.74	.72	.74	.50	.65
Steam dist wat wh bbls gal.	1.00	nom	1.00	1.10	.59	.68
Pitch Hardwood, wks ...ton	23.75	24.00	23.75	24.00	23.75	24.00
Coaltar, bbls, wks ....ton	19.00	22.00	19.00	22.00	19.00	22.00
Burgundy, dom, bbls, wks lb.	.06	.06½	.06	.06½	.06	.06½
Imported ....lb.	no prices		no prices		no prices	
Petroleum, see Asphaltum in Gums' Section.						
Pine, bbls ....bbl.	6.75	7.00	6.75	7.00	6.00	7.00
Polyamylnaphthalene, 1-c-l,						
drs, f.o.b. wks ....lb.	...	.25	...	.25	.25	.30
Potash, Caustic, wks, sol .lb	.06¼	.06¾	.06¼	.06¾	.06¼	.06¾
flake ....lb.	...	.07	...	.07	...	.07
liquid, tks ....lb.	...	.02⅞	...	.02⅞	...	.02⅞
Manure Salts, Dom						
30% basis, blk .....unit	...	.60	...	.60	...	.60
POTASSIUM						
Potassium Abietate, bbls ..lb.	...	.08	...	.08	...	.08
Acetate, tech, bbls, delv lb.	...	.28	...	.28	.26	.28
Bicarbonate, USP, 320 lb						
bbls ....lb.	.19	.21	.14	.21	.14	.17
Bichromate Crystals, 725						
lb csks *(*FP*) ....lb.	...	.09⅝	...	.09⅝	.08⅞	.09⅝
Binoxalate, 30 lb bbls ..lb.	...	.23	...	.23	..	.23
Bisulfate, 100 lb kgs ...lb.	.15½	.18	.15½	.18	.15½	.18
Carbonate, 80-85% calc 800						
lb cks ....lb.	.06½	.06¾	.06½	.06¾	.06½	.06¾
liquid, tks ....lb.	...	.0275	...	.0275	...	.0275
drs, wks ....lb.	.03	.03⅛	.03	.03⅛	.03	.03⅛
Chlorate crys, 112 lb kgs,						
wks (*FP*) (A) ......lb.	nom.	.11	nom.	.11	...	.11
gran, kgs ....lb.	.12	.14½	.12	.14½	.12	.14½
powd, kgs ....lb.	.09¾	.10	.09¾	.10	.09½	.10
Chloride, crys, bbls ....lb.	.08	nom.	.08	nom.	.04	.08
Chromate, kgs (*FP*) ...lb.	.24	.27	.24	.27	.24	.27
Cyanide, drs ....lb.	...	.55	...	.55		.55
Iodide, 250 lb bbls .....lb.	1.44	1.48	1.44	1.48	1.35	1.38
Metabisulfite, 300 lb bbls lb.	.18	.20	.18	.20	.18	.21
Muriate, bgs, dom, blk unit	.56	.58	.56	.58	.53½	.58
Oxalate, bbls ....lb.	.28	.30	.28	.30	.25	.30
Perchlorate, kgs,						
wks (FP) (A) ......lb.	.09½	.11	.09½	.11	.09½	.11

* Spot price is ⅛c higher.
(*FP*) Full Priority. (*PC*) Price Control. (A) Allocation

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	Current Market		1942 Low	1942 High	1941 Low	1941 High
Potassium (continued):						
Permanganate, USP, crys, 500 & 1000 lb drs, wks (*FP*) ....lb.	.20½	.21	.19¾	.21	.19¼	.21
Prussiate, red, bbls ....lb.	no prices		no prices		no prices	
Yellow, bbls ....lb.	.17	.19	.17	.19	.16	.19
Sulfate, 90% basis, bgs ton	...	36.25	...	36.25	...	36.25
Titanium Oxalate, 200 lb bbls ....lb.	...	.45	...	.45	...	.40
Pot & Mag Sulfate, 48% basis bgs ....ton	.	26.00	...	26.00	26.00	27.00
Propane, group 3, tks (*PC*) lb.	.02¾	.03¾	.02¾	.03¾	.03¾	.04
Putty, com'l, tubs ....100 lb.	...	3.15	...	3.15	...	3.15
Linseed Oil, kgs ...100 lb.	...	5.00	...	5.00	...	5.00
Pyrethrum, conc liq: (A)						
2.4% pyrethrins, drs, frt all'd ....gal.	...	5.75	4.30	5.75	4.40	4.95
3.6% pyrethrins, drs, frt all'd ....gal.	...	8.53	6.35	8.53	6.60	7.20
Flowers, coarse, bgs ...lb. bgs ....lb.	.27	.28	.21	.28	.20	.25
Fine powd, bbls ....lb.	...	.23	.22	.29	.21	.26
Pyridine, denat, 50 gal drs gal.	...	1.71	...	1.71	...	1.71
Refined, drs ....lb.	...	.46	...	.46	...	.48
Pyrites, Spanish cif Atlantic ports, blk .... unit	no prices		no prices		no prices	
Pyrocatechin, CP, drs, tins lb.	2.15	2.40	2.15	2.40	2.15	2.40
Q						
Quebracho, 35% liq tks ..lb.	...	.05¼	...	.05¼	.03¾	.05½
450 lb bbls, c-l ....lb.	...	.05	...	.05	.04¼	.05
Solid, 63%, 100 lb bales cif ....lb.	...	.04⅞	...	.04⅞	...	.04⅞
Clarified, 64% bales ..lb.	...	.05	...	.05	.05	.05⅛
Quercitron, 41 deg liq, 450 lb. bbls ....lb.	...	.10	...	.10	.08½	.09½
Solid, drs ....lb.	...	.18½	.18	.18½	.11	.16½
R						
R Salt, 250 lb bbls, wks ..lb.	...	.55	...	.55	...	.55
Resorcinol, tech cans ....lb.	.68	.74	.68	.74	.68	.74
Rochelle Salt, cryst ....lb.	...	.43½	...	.43½	.32½	.43½
Powd, bbls ....lb.	...	.42½	..	.42½	.31½	.42½
Rosin Oil, bbls, first run gal.	...	.51	.48	.51	.40	.50
Second run ....gal.	...	.53	.50	.53	.42	.56
Third run, drs ....gal.	...	.57	.54	.57	.46	.57
Rosins 600 lb bbls, 100 lb unit ex, yard NY:**						
B	...	3.52	2.96	3.66	2.06	3.55
D	...	3.58	2.73	3.65	2.08	3.55
E	...	3.61	3.06	3.74	2.07	3.62
F	...	3.62	3.27	3.79	2.08	3.59
G	...	3.62	3.52	3.79	2.18	3.52
H	...	3.62	3.53	3.79	2.27	3.50
I	...	3.63	3.53	3.79	2.26	3.50
K	...	3.63	3.56	3.88	2.36	3.61
M	...	3.66	3.66	3.94	2.38	3.68
N	...	3.67	3.67	4.05	2.47	3.71
WG	...	3.69	3.69	4.81	2.79	4.52
WW	...	3.73	3.73	5.20	3.05	4.57
X	...	3.73	3.73	5.20	3.10	4.57
Rosins, Gum, Savannah (280 lb. unit):**						
B	...	2.87	2.08	3.10	1.31	3.00
D	...	2.93	2.31	3.21	1.51	3.00
E	...	2.96	2.41	3.27	1.60	3.07
F	...	2.97	2.62	3.24	1.62	3.04
G	...	2.97	2.87	3.24	1.60	2.97
H	...	2.97	2.88	3.24	1.63	2.97
I	...	2.98	2.88	3.26	...	2.98
K	...	2.98	2.91	3.35	1.84	3.06
M	...	3.01	3.05	3.40	2.01	3.13
N	...	3.02	3.05	3.50	2.65	3.16
WG	...	3.04	3.06	4.26	2.76	3.97
WW	...	3.08	3.10	4.65	2.96	4.02
X	...	3.08	3.10	4.65	2.96	4.02
Rosin, Wood, c-l, FF grade, NY	1.70	2.00	1.70	2.00	1.40	2.00
Rotten Stone, bgs mines ton	25.00	37.50	25.50	37.50	25.50	37.50
Imported, lump, bbls ..lb.	no prices		no prices		no prices	
Powdered, bbls ....lb.	no prices		no prices		no prices	
S						
Sago Flour, 150 lb bgs ..lb.	.05	.05¾	.04¾	.05¾	.03½	.05½
Sal Soda, bbls wks ...100 lb.	...	1.20	...	1.20	...	1.20
Salt Cake, 94-96%, c-l, bulk wks ....ton	...	15.00	...	15.00	13.00	17.00
Chrome, c-l, wks ....ton	...	16.00	...	16.00	...	16.00
Saltpetre, gran, 450-500 lb bbls ....lb.	...	.082	...	.082	.076	.082
Cryst, bbls ....lb.	...	.092	...	.092	.086	.092
Powd, bbls ....lb.	...	.092	...	.092	.086	.092
Satin, White, pulp, 550 lb bbls ....lb.	.01¼	.01½	.01¼	.01½	.01¼	.01½
Schaeffer's Salt, kgs ....lb.	...	.46	...	.46	...	.46

** Jan. 30, 1941, high and low based on 280 lb. unit. June 30 prices.
s Bone dry prices at Chicago 1c higher; Boston ½c; Pacific Coast 2c; Philadelphia deliveries f.o.b. N. Y., refined 6c higher in each case; (*FP*) Full Priority. (*PC*) Price Ceiling. (A) Allocation

	Current Market		1942 Low	1942 High	1941 Low	1941 High
Shellac, Bone dry, bbls ..lb. s	.39	.40	.39	.40	.26	.40
Garnet, bgs ....lb.	.37	.39	.37	.39	.20	.39
Superfine, bgs ....lb. s	.32	.33	.32	.34	.16½	.34
T. N., bgs ....lb. s	.31	.32	.31	.33	.16	.33
Silver Nitrate, vials ....oz.	...	.26⅞	...	.26⅞	.24	.26⅞
Slate Flour, bgs, wks ....ton	11.00	12.00	9.00	12.00	9.00	10.00
Soda Ash, 58% dense, bgs, c-l, wks ....100 lb.	...	1.15	...	1.15	...	1.15
58% light, bgs ....100 lb.	1.05	1.13	1.05	1.13	1.05	1.08
blk ....100 lb.	...	.90	...	.90	...	.90
paper bgs ....100 lb.	1.05	1.08	1.05	1.08	1.05	1.08
bbls ....100 lb.	...	1.35	...	1.35	1.35	1.45
Caustic, 76% grnd & flake, drs ....100 lb.	...	2.70	...	2.70	...	2.70
76% solid, drs ....100 lb.	...	2.30	...	2.30	...	2.30
Liquid sellers, tks ..100 lb.	...	2.00	...	2.00	...	2.00
SODIUM						
Sodium Abietate, drs ....lb.	...	.11	...	.11	...	.11
Acetate, 60% tech, gran. powd, flake, 450 lb bbls wks ....lb.	...	.05	...	.05	.04	.06
90%, bbls 275 lb delv lb.	.06½	.07	.06½	.07	.06	.07
anhyd, drs, delv ....lb.	.08½	.10	.08½	.10	.08¼	.10
Alginate, drs ....lb.	...	.79	.69	.79	.39	.73
Antimoniate, bbls ....lb.	.15	.15½	.15	.15½	.14	.15½
Arsenate, drs ....lb.	...	.08	...	.08	.07	.08¾
Arsenite, liq, drs ....gal.	...	.35	...	.35	...	.35
Dry, gray, drs, wks ..lb.	...	.06¾	...	.06¾	.06½	.09¼
Benzoate, USP kgs ....lb.	.46	.50	.46	.50	.46	.50
Bicarb, powd, 400 lb bbl, wks ....100 lb.	...	1.85	1.70	1.85	...	1.70
Bichromate, 500 lb cks, wks* (*FP*) ....lb.	...	.07⅜	...	.07⅜	.06⅞	.07½
Bisulfite, 500 lb bbls, wks lb.	.03	.031	.03	.031	.03	.031
35-40% sol bbls, wks 100 lb.	1.35	1.80	1.35	1.80	1.40	1.80
Chlorate, bgs, wks (A) lb.	...	.06¼	...	.06¼	...	.06¼
Cyanide, 96-98%, 100 & 250 lb drs, wks ....lb.	.14	.15	.14	.15	.14	.15
Diacetate, 33-35% acid, bbls, lcl, delv ....lb.	.09½	.10½	.09½	.10½	.09	.10
Fluoride, white 90%, 300 lb bbls, wks ....lb.	...	.08	...	.08	.07	.08
Hydrosulfite, 200 lb bbls, f.o.b. wks ....lb.	.17	.18	.17	.18	.17	.18
Hyposulfite, tech, pea crys 375 lb bbls, wks ..100 lb.	2.75	3.00	2.75	3.00	...	2.80
Tech, reg cryst, 375 lb bbls, wks ....100 lb.	...	2.45	...	2.45	...	2.45
Iodide, Jars ....lb.	...	2.42	...	2.42	...	2.42
Metanilate, 150 lb bbls ..lb.	...	.40	...	.40	.41	nom.
Metasilicate, gran, c-l, wks ....100 lb.	...	2.50	...	2.50	2.35	2.50
cryst, drs, c-l, wks 100 lb.	...	3.05	...	3.05	...	3.05
Anhydrous, wks, c-l, drs ....100 lb.	...	4.00	...	4.00	3.75	4.00
wks, lcl, drs ...100 lb.	...	5.05	...	5.05	5.05	5.05
Monohydrated, bbls ....lb.	...	.03	.026	.03	.023	.026
Naphthenate, drs ....lb.	.12	.19	.12	.19	.12	.19
Naphthionate, 300 lb bbl lb.	...	.50	...	.50	...	.50
Nitrate, 92% crude, 200 lb. bgs. c-l, NY (A) ...ton	...	29.35	...	29.35	28.70	29.35
100 bgs, same basis ..ton	...	30.05	...	30.05	29.40	30.05
Bulk ....ton	...	27.00	...	27.00	...	27.00
Nitrite, 500 lb bbls ....lb.	...	.06¾	...	.06¾	.06¾	.11½
Orthochlorotoluene, sulfonate, 175 lb bbls, wks lb.	.25	.27	.25	.27	.25	.27
Orthosilicate, 300 lb drs, c-l anhyd. ....lb.	...	.04½	.04½	.04¾	.04½	.04¾
hyd, flake, 300 lb bbls, cl, f.o.b. wks ....lb.	...	.0315	.03	.0315	.0285	.03
Perborate, drs, 400 lb ..lb.	...	.14¾	...	.14¾	.14¾	.15¼
Peroxide, bbls, 400 lb ..lb.	...	.17	...	.17	...	.17
Phosphate, di-sodium, tech, 310 lb bbls, wks 100 lb.	2.75	2.90	2.75	2.90	2.30	2.90
bgs, wks ....100 lb.	2.55	2.70	2.55	2.70	2.10	2.70
Tri-sodium, tech, 325 lb. bbls, wks ....100 lb.	...	2.90	2.90	3.05	2.45	3.05
bgs, wks ....100 lb.	...	2.70	2.70	2.85	2.25	2.85
Picramate, 160 lb kgs ..lb.	...	.65	...	.65	...	.65
Prussiate, Yellow, 350 lb bbls, wks ....lb.	...	.11	...	.11	.10½	.11
Pyrophosphate, anhyd, 100 lb bbls f.o.b. wks frt eq lb.	.0545	.063	.0545	.0638	.0510	.0610
Sesquisilicate, drs, c-l, wks ....100 lb.	...	3.05	...	3.05	...	3.05
Silicate, 60°, 55 gal drs, wks ....100 lb.	...	1.70	...	1.70	...	1.70
40°, 55 gal drs, wks 100 lb.	...	.80	...	.80	...	.80
tks, wks ....100 lb.	...	.65	...	.65	...	.65
Silicofluoride, 450 lb bbls NY ....lb.	.09	.14½	.09	.15	.09¾	.15
Stannate, 100 lb drs ....lb.	.33½	.36½	.33½	.36½	.32½	.37
Stearate, bbls ....lb.	.19	.24	.19	.24	.19	.24
Sulfanilate, 400 lb bbls lb.	.16	.18	.16	.18	.16	.18
Sulfate, Anhyd, 550 lb bgs c-l, wks ....100 lb. ‡	1.70	1.90	1.70	1.90	1.45	1.90
Sulfide, 80% cryst, 440 lb. bbls, c-l, wks ....lb.	...	.024	...	.024	.02¼	.03
Solid, 650 lb drs, c-l, wks ....lb.	...	.0315	...	.0315	.03	.03¾
Sulfite, powd, 400 lb bbls wks ....lb.	...	.05¼	...	.05¼	...	.05¼
Sulfocyanide, drs ....lb.	.55	.65	.55	.65	.28	.65
Sulforicinoleate, bbls ...lb.	...	.12	...	.12	...	.12

s T. N. and Superfine prices quoted f.o.b. N. Y. and Boston; Chicago prices 1c higher; Pacific Coast 3c; Philadelphia f.o.b. N. Y. ‡ Bags 15c lower; * Feb. 28. (*PC*) Price Control. (A) Allocation

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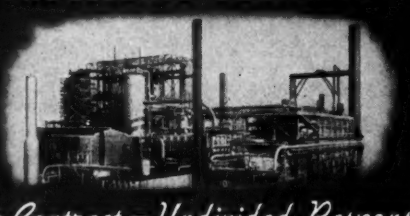
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Boston, Mass.
New York Philadelphia San Francisco London Paris

		Current Market		1942 Low	1942 High	1941 Low	1941 High
Sodium (continued)							
Supersilicate (see sodium sesquisilicate)							
Tungstate, tech, crys, kgs	lb.	no prices		no prices		no prices	
Sorbitol, drs, wks	lb.	...	.17¾	...	.17¾	.14¾	.17¾
Spruce, Extract, ord, tks	lb.	...	.01½	.01¼	.01½	.01⅛	.01¼
Ordinary, bbls	lb.	...	.02⅛	.01¾	.02⅛	.01⅝	.01¾
Super spruce ext, tks	lb.	...	.01½	...	.01½	.01⅜	.01½
Super spruce ext, bbls	lb.	...	.02	...	.02	.01⅞	.02
Super spruce ext, powd, bgs	lb.	...	.04½	.04	.04½	...	.04
Starch, Pearl, 140 lb bgs	100 lb.	...	3.10	...	3.10	2.90	3.10
Powd, 140 lb bgs	100 lb.	...	3.20	..	3.20	3.05	3.80
Potato, 200 lb bgs	lb.	...	.0637	.061	.0637	.04½	.0585
Imp, bgs	lb.	no prices		no prices		no prices	
Rice, 200 lb bbls	lb.	.09	.10	.09	.10	.07½	.09½
Sweet Potato, 240 lb bbls, f.o.b. plant	100 lb.	nom.	7.00	nom.	7.00	nom.	7.00
Wheat, thick, bgs	lb.	...	.05	...	.05	...	.05
Strontium, carbonate, 600 lb bbls, wks	lb.	no prices		no prices		no prices	
Nitrate, 600 lb bbls, NY	lb.	.07¼	.08¾	.07¼	.08¾	.07¼	.08¾
Sucrose, octa-acetate, den, grd, bbls, wks	lb.	...	.45	...	.45	...	.45
tech, bbls, wks	lb.	...	.40	...	.40	...	.40
SULFUR							
Sulfur, crude, f.o.b. mines	ton	...	16.00	...	16.00	...	16.00
Flour, com'l, bgs	100 lb.	1.65	1.95	1.65	1.95	1.40	1.95
bbls	100 lb.	1.95	2.50	1.95	2.50	1.95	2.50
Rubbermakers, bgs	100 lb.	...	2.05	...	2.05	...	2.05
bbls	100 lb.	...	2.35	...	2.35	...	2.35
Extra fine, bgs	100 lb.	...	2.35	...	2.35	...	2.35
Superfine, bgs	100 lb.	2.65	2.80	2.65	2.80	2.65	2.80
bbls	100 lb.	2.25	3.10	2.25	3.10	2.25	3.10
Flowers, bgs	100 lb.	3.05	3.35	3.05	3.35	2.80	3.35
bbls	100 lb.	3.40	3.70	3.40	3.70	3.15	3.70
Roll, bgs	100 lb.	2.40	2.70	2.40	2.70	2.15	2.70
bbls	100 lb.	2.30	2.85	2.30	2.85	2.30	2.85
Sulfur Chloride, 700 lb drs, wks	lb.	.03	.08	.03	.08	.03	.08
Sulfur Dioxide, 150 lb cyl	lb.	.07	.08	.07	.09	.07	.09
Multiple units, wks	lb.	.04½	.06	.04½	.07	.04½	.07
tks, wks	lb.	.04	.06	.04	.06	.04	.06
Refrigeration, cyl, wks	lb.	.13	.21	.13	.40	.16	.40
Multiple units, wks	lb.	...	.06½	.06½	.10	.07½	.10
Sulfuryl Chloride	lb.	.15	.40	.15	.40	.15	.40
Sumac, Italian, grd	ton	no prices		no prices		no prices	
Extract, 42°, bbls	lb.	...	.08	.06¼	.08	.06	.08
Superphosphate, 16% bulk, wks	ton	10.10	10.74	10.10	10.80	8.50	10.00
Run of pile	ton	9.60	10.24	9.60	10.24	8.00	9.60
Triple, 40-48%, a.p.a. bulk, wks, Balt. unit	ton	...	.85	.80	.85	.68	.80
T							
Talc, Crude, 100 lb bgs, NY	ton	12.50	24.50	12.50	24.50	14.00	16.00
Ref'd 100 lb bgs, NY	ton	17.25	19.25	17.25	19.25	17.25	19.25
French, 220 lb bgs, NY	ton	no prices		no prices		no prices	
Ref'd, white bgs, NY	ton	no prices		no prices		no prices	
Italian, 220 lb bgs to arr	ton	no prices		no prices		no prices	
Ref'd, white bgs, NY	ton	no prices		no prices		no prices	
Tankage, Grd, NY	unit u	...	4.60	4.25	4.85	2.35	4.10
Ungrd	unit u	...	4.96	5.25	5.70	2.35	5.10
Fert grade, f.o.b. Chgo	unit u	...	5.37	5.60	5.90	2.35	5.60
South American cif	unit u	...	5.35	5.05	5.60	2.60	4.75
Tapioca Flour, high grade, bgs	lb.	.04¾	.07¼	.04	.07¼	.03	.06¾
Tar Acid Oil, 15%, drs	gal.	...	.27½	...	.27½	.22	.24
25% drs (A)	gal.	...	.31½	...	.31½	.25	.27½
Tar, pine, delv, drs	gal.	...	.33	.32½	.33	.26	.29
tks, delv, E. cities	gal.	...	.24½	.24	.24½	...	.22
Tartar Emetic, tech, bbls	lb.	...	.47¾	...	.47¾	.36¾	.47¾
USP, bbls	lb.	.52¾	.53	.52¾	.53	.42	.53
Terpineol, den grade, drs	lb.	...	.17	...	.17	...	.17
Tetrachlorethane, 650 lb drs	lb.	.08	.08½	.08	.08½	.08	.08½
Tetrachlorethylene, drs, tech	lb.	.08	.09	.08	.09	.08	.09
Tetralene, 50 gal drs, wks	lb.	...	.19	...	.19	.19	.21
Thiocarbanilid, 170 lb bbls	lb.	...	.24	...	.24	...	.24
Tin, crystals 500 lb bbls, wks	lb	.39	.39½	.39	.39½	.38	.40
Metal, NY (*PC*) (A)	lb.	...	.52	...	.52	.501	.52¾
Oxide, bbls, wks	lb.	...	.55	.55	.57	.54	.56
Tetrachloride, 100 lb drs, wks	lb.	no prices		no prices		.25¼	.31
Titanium Dioxide, 300 lb bbls (*PC*)	lb.	...	.14½	...	.14½	.13¾	.14½
Barium Pigment, bbls	lb.	.05¾	.06½	.05¾	.06½	.05¾	.06½
Calcium Pigment, bbls	lb.	.05½	.05¾	.05½	.05¾	.05½	.05¾
Titanium tetrachloride, drs, f.o.b. Niagara Falls	lb.	.32	.45	.32	.45	.32	.45
Titanium trichloride 23% sol, bbls f.o.b. Niagara Falls	lb.	.22	.26	.22	.26	.22	.26
20% solution, bbls	lb.	.175	.215	.175	.215	.175	.215
Toluidine, mixed, 900 lb drs, wks	lb.	...	.26	...	.26	...	.26
Toluol, drs, wks (*FP*) (A)	gal.	...	.33	...	.33	.32	.33
tks, frt all'd (*FP*)	gal.	...	.28	...	.28	.27	.28
Toner Lithol, red, bbls	lb.	.55	.60	.55	.60	.55	.60
Para, red, bbls	lb.	.70	.75	.70	.75	.70	.75
Toluidine, bgs	lb.	...	1.05	...	1.05	...	1.05
Triacetin, 50 gal drs, wks,	lb.	...	.26	...	.26	...	.26
Triamyl Borate, lcl, drs, wks,	lb.	...	.33	...	.33	.27	.33
Triamylamine, drs, lcl, wks, drs	lb.	...	1.01	...	1.01	...	1.01

(*FP*) Full Priority. (A) Allocation

Current

Tributylamine
Zinc Chloride

	Current Market		1942 Low	1942 High	1941 Low	1941 High
Tributylamine, lcl, drs, f.o.b. wks ... lb.	...	.81		.81	...	.81
Tributyl citrate, drs, frt all'd lb.	...	.34	.24	.34	.24	.26
Tributyl Phosphate, frt all'd lb.	...	.47	...	.47	.42	.47
Trichlorethylene, 600 lb drs, frt all'd E. Rocky Mts lb.	(*FP*)	.08	...	.08	.08	.09
Tricresyl phosphate, tech, (*FP*) ... lb.	.25	.31	.25	.31	.22	.36½
Triethanolamine, 50 gal drs, wks ... lb.	...	.19	...	.19	...	.19
tks, wks ... lb.	...	.18	...	.18	...	.18
Triethylamine, lcl, drs, f.o.b. wks ... lb.	..	1.16	...	1.16	...	1.16
Triethylene glycol, drs, wks lb.	...	.26	...	.26	...	.26
Trihydroxyethylamine Oleate, bbls ... lb.	...	.30	...	.30	...	.30
Stearate bbls ... lb.	...	.30	...	.30	...	.30
Trimethyl Phosphate, drs, lcl, f.o.b. dest. ... lb.	.54	.56	.54	.56	.50	.54
Trimethylamine, c-l, drs, frt all'd E. Mississippi ... lb.	...	.85	...	.85	.85	1.00
Triphenylguanidine ... lb.	.58	.60	.58	.60	.58	.60
Triphenyl Phosphate, drs (*FP*) ... lb.	.31	.32	.31	.32	.33	.38
Tripoli, airfloated, bgs, wks ton	...	21.50	21.00	26.00	21.00	26.00
Turpentine (Spirits), c-l, NY dock, bbls ... gal.	...	.74	.69¼	.82½	.45	.83
Savannah, bbls.* ... gal.	...	.57	.55¼	.70½	.33½	.72½
Wood Steam dist, drs, c-lcl, NY ... gal.	...	.63	.61	.80	.35	.76
tks, delv E. cities .. gal.	...	.58	.56	.72	...	...
Wood, dest dist, cl-lcl, drs, delv E. cities ... gal.	.60	.65	.60	.70	.35	.65
tks, delv E. cities .. gal.	...	.55	.55	.58	...	...
U						
Urea, pure 112 lb cases .. lb.	...	.12	...	.12	...	.12
Fert grade, bgs, c. i. f. S.A. points ... ton	no prices		no prices		no prices	
Dom f.o.b., wks ... ton	...	80.00	...	80.00	...	85.00
Urea Ammonia, liq., nitrogen basis ... ton	...	121.58	...	121.58	...	121.58
V						
Valonia beard, 42%, tannin bgs ... ton	no prices		no prices		no prices	
Cups, 32% tannin bgs .. ton	no prices		no prices		no prices	
Extract, powd, 63% ... lb.	no prices		no prices		no prices	
Vanillin, ex eugenol, 25 lb tins, 2000 lb lots ... lb.	...	2.00	2.00	2.60	...	2.60
Ex-guaiacol ... lb.	...	2.35	...	2.35	2.50	2.55
Ex-lignin ... lb.	...	2.35	...	2.35	2.50	2.55
Vermilion, English, kgs .. lb.	3.12	3.17	3.12	3.17	3.12	3.17
W						
Wattle Bark, bgs ... ton	41.00	43.00	41.00	43.00	37.50	43.00
Extract, 60°, tks, bbls .. lb.	.04475	.046	.04475	.0475	.03⅞	.05
Wax, Bayberry, bgs ... lb.	.18	.20	.18	.20	.18	.20
Bees, bleached, white 500 lb slabs, cases ... lb.	...	.61	.58	.61	.36½	.56
Yellow, African, bgs .. lb.	...	.49	...	.49	.30	.47
Brazilian, bgs ... lb.	...	.50	...	.50	.31	.50
Refined, 500 lb slabs, cases lb.	.59	.60	.55	.60	.35	.52
Candelilla, bgs ... lb.	...	.38	.33	.38	.19	.33
Carnauba, No. 1, yellow, bgs ... lb.	.88	.89	.87	.89	.68	.88
No. 2, yellow, bgs ... lb.	.87	.88	.86	.88	.66	.85
No. 2, N. C., bgs ... lb.	.84	.85	.82	.85	.62	.79
No. 3, Chalky, bgs ... lb.	.77	.78	.75	.78	.55	.78
No. 3, N. C., bgs ... lb.	.78	.79	.77	.79	.58	.79
Ceresin, dom, bgs ... lb.	.13½	.14	.13½	.14	.11	.14
Japan, 224 lb cases ... lb.	.40	.45	.30	.45	.16½	.35
Montan, crude, bgs ... lb.	.45	.46	.45	.46	.45	.46
Paraffin, see Paraffin Wax.						
Spermaceti, blocks, cases lb.	.26	.27	.24	.27	.24	.25
Cakes, cases ... lb.	.27	.28	.25	.28	.25	.26
Wood Flour, c-l, bgs ... ton						
bgs, c-l, wks ... ton	24.00	25.00	24.00	25.00	24.00	25.00
Whiting, chalk, com 200 lb	18.00	22.00	18.00	22.00	18.00	19.00
Gilders, bgs, c-l, wks .. ton	20.00	24.00	16.00	24.00	16.00	20.00
X						
Xylol, frt all'd, East 10° tks, wks ... gal.	...	.27	...	.27	...	.29
Com'l tks, wks, frt all'd gal.	...	.27	...	.27	.26	.27
Xylidine, mixed crude, drs lb.	.35	.36	.35	.36	.35	.36
Z						
Zein, bgs, 1000 lb lots, wks ... lb.	...	.20	...	.20	...	.20
Zinc Acetate, tech, bbls, lcl, delv ... lb.	.16	.17	.16	.17	.15	.16
Arsenite, bgs, frt all'd .. lb.	...	.12	...	.12	...	.12
Carbonate tech, bbls, NY lb.	.14	.20	.14	.20	.14	.20
Chloride fused, 600 lb drs, wks ... lb.	...	.05	...	.05	...	.05
Gran, 500 lb drs, wks lb.	...	.0575	...	.0575	...	.0575
Soln 50%, tks, wks 100 lb.	...	2.50	...	2.50	2.25	2.50

(*FP*) **Full Priority.** (*PC*) Price Control. July 31 price.

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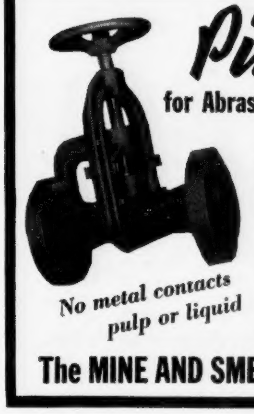

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Prices Current

	Current Market		1942 Low	1942 High	1941 Low	1941 High
Zinc (continued)						
Cyanide, 100 lb drs .... lb.	.33	.37	.33	.37	.33	.37
Dust, 500 lb bbls, c-l, delv lb.	...	.1035	...	.1035	.09¼	.1035
Metal, high grade slabs, c-l,						
NY (*FP*) (*PC*) 1000 lb.	...	8.65	...	8.65	7.65	8.64
E. St. Louis ..... 100 lb.	...	8.25	...	8.25	7.25	8.25
Oxide, Amer, bgs, wks lb.	...	.07¼	...	.07¼	.06½	.07¼
French 300 lb bbls, wks lb.	...	.07¼	...	.07¼	.06¾	.07¼
Palmitate, bbls .... lb.	.32	.33	.32	.33	.24½	.33
Resinate, fused, pale bbls lb.	.11	.12	.10	.12	...	.10
Stearate, 50 lb bbls .... lb.	.30	.31	.30	.31	.22	.31
Sulfate, crys, 40 lb bbls						
wks .... lb.	...	.360	.360	.365	.315	.365
Flake, bbls .... lb.	...	.410	.405	.410	.335	.405
Sulfide, 500 lb bbls, delv lb.	...	.08½	.08	.08½	...	.08
bgs, delv (*PC*) ...... lb.	.14	.14¼	.14	.14¼	.08	.13¼
Sulfocarbolate, 100 lb kgs lb	.24	.25	.24	.29	.03⅜	.07¾
Zirconium Oxide, crude,						
70-75% grd, bbls, wks ton	75.00	100.00	75.00	100.00	75.00	100.00

Oils and Fats

	Current Market		1942 Low	1942 High	1941 Low	1941 High
Babassu, tks, futures ..... lb.	...	.111	no prices		...	.06
Castor, No. 3, 400 lb drs lb.	...	.13¾	.12½	.13¾	.0180	.12½
(*PC*) Blown, 400 lb drs lb.	...	.15¼	.14	.15¼	.11¾	.14
China Wood, drs, spot NY lb.	...	.39	.39	.40⅛	.27¼	.37¼
Tks, spot NY .... lb.	...	.3875	.3875	...	.26¼	.35½
Coconut, edible, drs NY . lb.	...	.0985	...	...	.08	.15½
Manila, tks, NY ...... lb.	...	.0835	...	...	.03⅜	.10
Tks, Pacific Coast .... lb.	no prices		no prices		...	.03¼
Cod, Newfoundland, 50 gal						
bbls .... gal.	...	.90	.85	.90	.07½	.80
Copra, bgs, NY .... lb.	no prices		no prices		.0180	.04¼
Corn, crude, tks, mills lb.	.12¾	nom.	.12½	.12¾	.06⅝	.13
Refd, 375 lb bbls, NY lb.	.15½	nom.	.15	.15½	.14¾	.16
Degras, American, 50 gal						
bbls, NY .... lb.	.12½	nom.	.11½	.12½	.07½	.08¾
Greases, Yellow .... lb.	...	.0929	...	.0929	.04¾	.08½
White, choice, bbls, NY lb.	...	.097	...	.097	.05	.09
Lard, Oil, Edible, prime lb.	...	.15½		.15½	.08½	.14½
Extra, bbls .... lb.	...	.15¼	.15	.15¼	.08¼	.13¾
Extra, No. 1, bbls .... lb.	...	.14⅝	.14½	.14⅝	.08	.13¼
Linseed, Raw less than 5						
drs lots .... lb.	...	.143	.125	.149	.091	.123
drs, c-l, spot .... lb.	.135	.137	.117	.143	.095	.190
Tks .... lb.	.126	.132	.108	.134	.084	.1060
Menhaden, tks, Baltimore gal.	nom.	.666	.63¾	.666	.30	.60
Refined, alkali, drs .... lb.	.124	.128	.12	.128	.084	.122
Kettle boiled, drs ..... lb.	.134	.138	.13	.138	.096	.132
Light pressed, drs ..... lb.	.114	.118	.11	.118	.082	.112
Tks .... lb.	.106	.108	.102	.108	.072	.10
Neatsfoot, CT, 20°, bbls, NY lb.	nom.	.25¾	...	.25¾	.18¼	.26½
Extra, bbls, NY .... lb.	nom.	.14⅞	...	.14⅞	.08¼	.14
Pure, bbls, NY .... lb.	nom.	.19¼	.17¾	.19¼	.12¼	.17¾
Oiticica, bbls .... lb.	.25	...	.25¼	nom.	.16½	.23½
Oleo, No. 1, bbls, NY ... lb.	...	.13¼	...	.13¼	.07⅜	.13¼
No. 2, bbls, NY ...... lb.	...	.13	...	.13	.07⅜	.13
Olive, denat, bbls, NY .. gal.	4.20	4.30	4.00	4.50	2.25	4.25
Edible, bbls, NY ...... gal.	4.25	4.50	4.25	5.50	4.75	5.30
Foots, bbls, NY ...... lb.	.19½	nom.	.19	.20	.10¼	.19
Palm, Kernel, bulk ..... lb.	no prices		no prices		no prices	
Niger, cks .... lb.	.0825	.0825	.0925	...	.04¼	.09
Sumatra, tks .... lb.	no prices		no prices		.02	.09
Peanut, tks, f.o.b. mill ... lb.	.12⅞	.13	.12⅞	.13	.05¼	.16
Refined, bbls, NY . lb.	.17	nom.	.16¾	.17	.08	.16
Perilla, drs, N Y (A) .. lb.	...	.246	...	.246	.18	.23
Tks, Coast .... lb.	...	.2380	...	.2380	.16½	.21½
Pine, see Pine Oil, Chem. Sec.						
Rapeseed, blown, bbls, NY lb.	.18	.18½	.18	.18½	.16½	.18
Denatured, drs, NY . gal.	...	nom.	...	nom.	.95	1.00
Red, Distilled, drs .... lb.	.133	.143	.12¾	.143	.07¾	.13
Tks .... lb.	...	.1245	.12	.12½	.06¾	.11½
Sardine, Pac Coast, tks . gal.	.66½	nom.	.66½	nom.	.39	.62½
Refined alkali, drs ... lb.	.124	.128	.12	.128	...	...
Light pressed, drs .... lb.	.114	.118	.11	.118	.084	.122
Tks .... lb.	.106	.108	.102	.108	.078	.112
Soy Bean, crude						
Dom, tks, f.o.b. mills .. lb.	.12¼	nom.	.12¼	nom.	.05⅜	.12¾
Crude, drs, NY ...... lb.	.12¾	nom.	.13	nom.	.06¼	.12¼
Ref'd, drs, NY .... lb.	.14¼	nom.	.14¼	nom.	.05½	.12¼
Tks .... lb.	.13½	nom.	.13½	nom.	.07⅝	.13½
Sperm, 38° CT, bleached						
(*FP*) bbls, NY (A) lb.	.1301	...	.1301	nom.	.11	.127
45° CT, blchd, bbls, NY lb.	.1278	...	.1278	nom.	.103	.12
Stearic Acid, double pressed						
dist bgs .... lb.	.15	.16½	.15	.16½	.09½	.13¾
Double pressed saponified						
bgs .... lb.	.15¼	.16¾	.15¼	.16¾	.09¾	.14
Triple pressed dist bgs lb.	.18	.19½	.18	.19½	.12½	.16½
Stearine, Oleo, bbls ...... lb.	...	.11	...	.11	...	.09
Tall, crude, drs, c-l, wks ton	...	55.00	40.00	55.00	...	...
tks, wks .... ton	...	40.00	30.00	40.00	...	...
dist, drs, c-l, delv ..... lb.	...	.05	.04	.05	...	...
tks, wks .... lb.	...	.04½	.03½	.04½	...	...
Tallow City, extra loose .. lb.	...	.097¼	...	.097¼	...	.07⅜
Edible, tierces .... lb.	no prices		no prices		...	.05⅜
Acidless, tks, NY ...... lb.	.13	nom.	.13	nom.	.07½	.11½
Turkey Red, single, drs .. lb	...	.08¾	...	.08¾	.06½	.08¼
Double bbls .... lb.	...	.12	...	.12	.09½	.11
Whale:						
Winter bleach, bbls, NY lb.	...	.1110	...	.1110	.099	.1110
Refined, nat, bbls NY .. lb.	...	.1070	...	.1070	.095	.1070

(*FP*) Full Priority. (*PC*) Price Control. (A) Allocation
* Previous prices were on gallon basis.

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T. E. R. SINGER

Technical Literature Searches, Bibliographies and Abstracting

501 Fifth Avenue, New York
Murray Hill 2-5346-7

Booklets & Catalogs

Chemicals

A398. Glycerine Facts; July, 1942. Tells of many uses of glycerine. Gives summary of glycerine in modern explosives and a review of sulfonamide preparations.

A399. Industrial Uses of Soap. A bulletin of technical and specialized information published from time to time by the Association of American Soap & Glycerine Producers.

A400. Molten Salt Baths is the title of a new 72-page illustrated manual published by the Electrochemicals Department of E. I. du Pont de Nemours & Company.

Case hardening of ferrous metals in baths containing sodium cyanide, use of simple cyanide baths as reheat media for high carbon and oil hardening alloy steels and for carbonized work, and nitriding of high-speed steel and other high alloy tool steels in molten cyanide baths are described in the manual.

The Du Pont Accelerated Salt Bath for efficient production of mixed carbon-nitrogen cases on plain carbon and on alloy carburizing steels, and the Du Pont Carburizing Salt for production of deep cases at usual carburizing temperatures also are described.

Information on Du Pont Heat Treating Salts for heat treatment of steel and other metals and for heat coloring of finished and polished steel parts is contained in the illustrated manual. There also is information on salt bath equipment, cyanide disposal, modern analytical methods, safety in operation, first aid and medical aid. E. I. du Pont de Nemours & Co., Inc.

A401. Paint Progress; Vol. 3, No. 2. Discusses developments in painting for better visibility in dimouts and blackouts and for increased production in plants and factories. The New Jersey Zinc Co.

A402. Plastics. 8-page folder giving the story of the manufacturing process of Durez Plastics from the raw materials to the finished products.

A403. Protective Coatings. Data sheets giving information on a varied line of coatings. Protective Coatings, Inc.

A404. The Merck Report; Vol. 51, No. 3. Carries a number of short articles devoted to pharmacy and medicine. Among them are: Progress in Medicinal Chemistry, Medicine in War, Treatment of Malaria in British Solderies, Mineral Metabolism. Merck & Co., Inc.

A405. Thiokol Facts; Vol. 2, No. 3. 12-page booklet discusses Thiokol Retreads for Tires, Tank Cars from Boxcars, Fighing Fire Bombs, Tank Gaskets and New Thiokol Plant. Thiokol Corp.

Equipment-Containers

E704. Brush Sifters; Catalog No. 27-A. Describes and illustrates line of equipment for the food, drug, chemical and allied industries. Robinson Manufacturing Co.

E705. Ceramics, Synthetics, Alloys. 12-page illustrated bulletin summarizes company's manufacturing activities in the ceramic, synthetic, rubber and alloy industries. The United States Stoneware Co.

E706. Chain for Elevating and Conveying; Bulletin No. 742-CN. 16-page booklet describes and illustrates products made from manganese steel. Also gives technical data on this type of steel. American Manganese Steel Division, The American Brake Shoe & Foundry Co.

E707. Dryers, Kilns, Coolers; Bulletin No. 16-C. 36-page illustrated booklet of information and data on Ruggles-Coles dryers, kilns and coolers. Hardinge Co.

E708. Electric Motors. 24-page booklet entitled "A Guide to Wartime Care of Electric Motors," treats separately the many factors that hinder long and troubled-free motor life. Allis-Chalmers Mfg. Co.

E709. Electric Power Systems; GED 1006. Engineers handy guide for quickly installed electric power systems for new plants and plant extensions. General Electric Co.

E710. First Facts; No. 7, Vol. 1. 8-page booklet of interest to the processing industries. Describes and illustrates inventory of equipment in stock. First Machinery Corp.

E711. Hoists. Pocket-sized folder is a condensation of complete catalog and gives the essential information on classes and types of "Lo-Hed" hoists, capacities, ratings, weights, hoisting speeds, heights of lifts. American Engineering Co.

E712. Homogenizers. 6-page folder describes and illustrates portable hand homogenizer for hospitals, pharmacies, schools and other food, chemical, cosmetic and other laboratories. International Emulsifiers, Inc.

E713. Kjeldahl Equipment; Bulletin 515. Describes and illustrates this type of equipment used in routine control and research laboratories for the determination of nitrogen and protein content. Precision Scientific Co.

E714. Process Equipment; Vol. IX, No. 1. News of interest to users of process equipment along with descriptions and illustrations of machinery and equipment available. Consolidated Products Co., Inc.

E715. Rubber Linings. Catalog Section 9000 points out that satisfactory rubber linings have been developed for handling most inorganic acids except strong oxidizing agents such as nitric, chromic and concentrated sulfuric, as well as for most inorganic salts and alkalies, and many organic chemicals now in commerce. Also gives table listing over 100 of the most common services for which Vulcalock Rubber Linings are suitable and giving the limits of temperature and concentration of the fluid in each case. The B. F. Goodrich Co.

E716. Steam-Jet Ejectors; Bulletin W-205-B7A. Describes, illustrates and gives engineering data and drawings on two-stage condensing type steam-jet ejectors. Worthington Pump and Machinery Corp.

E717. 5 Ways to Conserve Copper. 20-page illustrated booklet offers specific suggestions for a conservation program in war plant electrical systems. General Electric Co.

E718. Wheelco Comments; Vol. 1, No. 7. Features article on use of temperature control instruments in heat treating plant. Wheelco Instruments Co.

Chemical Industries
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New York City

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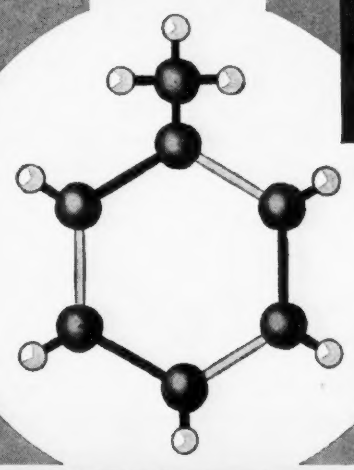
J&L STEEL



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"WE"-EDITORIALLY SPEAKING

This country is certainly heading into one of the greatest bottlenecks yet to plague the American war production program and yet, strangely enough, one hears very little about it in the daily press—perhaps it is just sheer ignorance of the facts and a complete lack of ability to interpret them. It is a well-known fact that the army, navy and marine corps are putting heavy pressure on chemical and engineering students to join up with the enlisted reserve. Young men of this impressionable age can easily be swayed away from industry where they unquestionably will be desperately needed. Many local draft boards are also helping to dissipate this backlog of technically trained men despite the very intelligent viewpoint of General Hershey's Selective group in Washington. Let's take this synthetic rubber program, for example. At least two thousand highly trained operators will be needed, perhaps many times more. Where are these to come from if not from the graduating classes in May of this year and those coming out in 1943. Yet a recent survey indicates that not more than half of the graduates in those classes have signified their intention of going into industry. One of the many congressional committees that are so busy delving into the rubber picture might be better serving the nation if they turned their efforts to finding out something about the personnel problem. They would certainly get some very interesting facts from such men as Dean Frank C. Whitmore of Penn State and others. The armed forces must be stopped raiding the technical brains of the country. Perhaps the most satisfactory answer is the formation of a Student Engineering Reserve of the United States. Let's put these men in a distinctive uniform so that they don't feel like slackers when in the presence of their best "gal."

Priorities
Allocations
Price Controls

See the Statistical and Technical Data Section (Part 2 of this issue) for monthly digest of Government Regulations of Materials and Prices. Invaluable to you in your work.

Looking through the August issues of 1927 (we were then a weekly) searching for unusual items of news of 15 years ago provided some exceptionally interesting reading. Featuring the news was the report of the agreement of Standard Oil of New Jersey with the German I. G. On page 249 of the August 18th issue appeared the following:

"John H. Nelson, Minerals Divisions, Department of Commerce, says the inauguration of a new industry may be expected from the development of the 'oil from coal' processing reported to be the subject of negotiations between the Standard Oil of New Jersey and the German Dye Trust. Mr. Nelson said the Department has been aware for some time that an exchange of patents and agreements on the use of facilities have been contemplated by Standard Oil and the German Dye Trust."

In the light of events of the last few months it is rather significant that government officials were well aware of this agreement 15 years ago and did not view it with alarm. At that time, however, neither Standard, our government officials, nor in all probability the officials of the German I. G. had any inkling of what was rattling around in the diseased brain of Herr Hitler. It would be interesting to learn what Mr. Thurman Arnold thought about it in August 1927 or even if he saw and read the news as published in the daily newspapers.

Did you know that:

The recent rubber scrap drive netted 454,155 tons. Page Mr. Simpson who stirred up the very devil in Washington by telling a senatorial committee that there were ten million tons available. The fact of the matter is that Mr. Simpson's figure is just about one million tons less than the entire total imported into this country. Yet Mr. Simpson was "billed" as a rubber expert. Right now they are "a dime a dozen" in Washington.

H. F. Willkie, whiskey expert and brother of Wendell Willkie, reports that 657,000,000 gallons of 190-proof alcohol can be produced in this country with existing equipment.

Fifteen Years Ago

From Our Files of August, 1927

Institute of Chemistry of the A. C. S. ends first session at Penn State.

Caesar A. Grasselli, head of Grasselli Chemical dies at age 76.

A. Anable made director of publicity for the Dorr Co.

Standard Oil of New Jersey confirms agreement with I. G. reached on cooperation for the development and exploitation of all the crude oil and oil patents of both companies.

Even silver is getting scarce and industries not working on war work may have difficulty in getting adequate supplies. This should cheer up the silver-bloc in Congress.

Scrap tin from 20 collapsible tubes supplies sufficient of this metal for one fighter plane.

More than 10,000 high school students competed for the scholarships awarded by Westinghouse in the first annual science talent search "sponsored by Science Service."

The September issue will be "a tasty morsel" for our readers. To mention just two feature articles will prove the point. "Sulfamic Acid," by Allan Perry of Du Pont, and "Executive Control in Chemical Plant Operations," by W. von Pechmann of the Agfa Ansco Division of General Aniline & Film. The latter article explains, with illustrations, a system which enables executives to control production in an unusually efficient manner. It is one of the most unusual articles to appear in this journal. Take it from "We"—don't miss it.

Calendar of Events

Aug. 17, Utah Paint, Varnish & Lacquer Ass'n Monthly Meeting, Salt Lake City, Utah.

Aug. 31, Association of Consulting Chemists & Chemical Engineers, Inc.; Council Meeting; The Chemists' Club, New York, N. Y.

Sept. 3, Indianapolis Paint, Varnish & Lacquer Assoc. Regular Monthly Meeting, Columbia Club, Indianapolis, Ind.

Sept. 7-11, American Chemical Society, Semi-Annual Meeting, Hotel Statler, Buffalo, N. Y.

Sept. 9, American Institute of Consulting Engineers, Luncheon & Council Meeting, City Midday Club, New York.

Sept. 9-11, American Institute of Electrical Engineers (Pacific Coast Convention), Vancouver, B. C.

Sept. 9-11, American Water Works Assoc. Michigan Section, Park Place Hotel, Traverse City, Mich.

Sept. 17, New England Paint & Varnish Production Club. Hotel Vendome, Boston, Mass.

Sept. 21, Utah Paint, Varnish & Lacquer Ass'n. Monthly Meeting, Ambassador Hotel, Salt Lake City, Utah.

Sept. 28, Association of Consulting Chemists & Chemical Engineers, Inc. Council Meeting, The Chemists' Club, New York, N. Y.

Sept. 28-Oct. 1, National Wholesale Druggists Association, Annual Convention, Greenbrier Hotel, White Sulphur Springs, West Va.

Sept. 29-Oct. 1, American Gas Association, Annual Meeting, San Francisco, Calif.

Oct. 1, Indianapolis Paint, Varnish & Lacquer Assoc. Regular Monthly Meeting, Columbia Club, Indianapolis, Ind.

Oct. 5-9, 31st National Safety Congress & Exposition of the National Safety Council, Stevens Hotel, Chicago, Ill.

Oct. 7, Maryland Section of American Institute of Chemical Engineers, General Meeting, Blackstone Hotel, Baltimore, Md.

Oct. 7, American Institute of Consulting Engineers, Luncheon & Council Meeting, City Midday Club, New York.

Oct. 7, The Electrochemical Society, Inc., Theory and Electrodeposition, Detroit, Mich.

Oct. 12-14, American Institute of Mining and Metallurgical Engineers, Inc., Institute of Metals and Iron & Steel Divs., Book-Cadillac Hotel, Detroit, Mich.

Oct. 12-14, American Society of Mechanical Engineers, Fall Meeting, Rochester, N. Y.

Oct. 12-14, International Association of Electrical Inspectors, Eastern Section, Boston, Mass.

Oct. 12-16, National Metal Congress & Exposition, Detroit, Mich.

Oct. 15, New England Paint & Varnish Production Club, Hotel Vendome, Boston, Mass.

Oct. 15-16, Tanners' Council of America, Annual Meeting, Palmer House, Chicago, Ill.

Nov. 16-18, American Institute of Chemical Engineers, Netherlands-Plaza, Cincinnati, Ohio.

Nov. 24-29, National Chemical Exposition, Hotel Sherman, Chicago, Ill.

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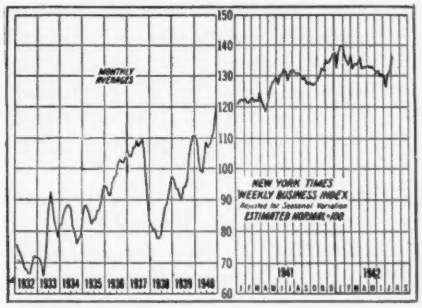
WEEKLY STATISTICS OF BUSINESS

Week Ending	Carloadings 1942	Carloadings 1941	Carloadings % of Change	Electrical Output* 1942	Electrical Output* 1941	Electrical Output* % of Change	Jour. of Com. Price Index	Nat'l Chem. & Drugs	Fertilizer Fats & Oils	Ass'n Price Indices Fert. Mat.	Ass'n Price Indices Mixed Fert.	†Labor Dept. All Groups	†Labor Dept. Chem. & Drug Price Index	% Steel Activity	N. Y. Times Index Bus. Act.	Fisher Commodity Index
June 27	853,441	908,604	— 6.1	3,457,024	3,156,825	+ 9.5	103.6	120.7	137.0	117.8	115.3	127.3	97.2	98.0	130.2	106.6
July 4	753,855	740,359	+ 1.8	3,424,188	2,903,727	+17.9	104.5	120.7	137.8	117.8	115.3	128.8	97.2	96.5	129.3	108.2
July 11	855,124	876,142	— 2.4	3,428,918	3,178,054	+ 7.9	104.5	120.7	137.3	117.8	115.3	128.9	97.2	97.7	126.5	108.4
July 18	857,067	899,370	— 4.7	3,565,367	3,199,105	+11.4	104.4	120.7	137.6	117.8	115.3	128.9	97.2	99.1	130.4	108.2
July 25	855,522	897,564	— 4.7	3,625,645	3,220,526	+12.6	104.7	120.7	139.1	117.9	115.3	129.3	96.4	98.7	131.8	108.4

MONTHLY STATISTICS

CHEMICAL:	May 1942	May 1941	April 1942	April 1941	Mar. 1942	Mar. 1941
Acid, sulfuric (expressed as 50° Baumé, short tons, Bureau of the Census)						
Total prod. by fert. mfrs.	No Longer Available		......	......	......	......
Consumpt. in mfr. fert.	......	......	......	......	......	......
Stocks end of month	......	......	......	......	......	......
Alcohol, Industrial (Bureau Internal Revenue)						
Ethyl alcohol prod., proof gal..	No Longer Available		......	......	......	......
Comp. denat. prod., wine gal...	......	......	......	......	......	......
Removed, wine gal.	......	......	......	......	......	......
Stocks end of mo., wine gal...	......	......	......	......	......	......
Spec. denat. prod., wine gal. ...	......	......	......	......	......	......
Removed, wine gal.	......	......	......	......	......	......
Stocks end of mo., wine gal...	......	......	......	......	......	......
Ammonia sulfate prod., tons a..	66,874	61,495	70,153	57,916.5	65,216	64,524
Bensol prod., gal. b	No Longer Available		......	......	......	......
Byproduct coke, prod., tons a..	5,275,803	4,845,854	5,058,799	5,068,799	5,199,728	4,999,309
Cellulose Plastic Products (Bureau of the Census)						
Nitrocellulose sheets, prod., lbs.	898,034	935,239	983,607	927,399	1,006,242	844,819
Sheets, ship., lbs.	842,003	863,997	1,017,634	819,485	984,379	794,199
Rods, prod., lbs.	340,205	306,749	321,667	356,179	296,100	368,429
Rods, ship., lbs.	325,579	346,031	337,315	342,448	269,593	342,024
Tubes, prod., lbs.	57,457	130,457	109,593	136,048	131,920	99,345
Tubes, ship., lbs.	137,143	104,711	171,548	104,665	139,591	96,298
Cellulose acetate, sheets, rod, tubes						
Production, lbs.	465,100	524,393	567,799	402,492	519,357	464,601
Shipments, lbs.	482,676	472,328	588,458	408,252	486,470	372,804
Molding comp., ship.; lbs. ...	3,053,767	2,145,523	3,460,615	2,102,084	3,444,374	1,990,982
Methanol (Bureau of the Census)						
Production, crude, gals.	No Longer Available		......	......	......	......
Production, synthetic, gals.	......	......	......	......	......	......
Pyroxylin-Coated Textiles (Bureau of the Census)						
Light goods, ship., linear yds...	......	......	3,836,777	4,223,849	3,972,491	3,806,132
Heavy goods, ship., linear yds..	......	......	2,852,024	3,326,482	2,679,692	3,294,035
Pyroxylin spreads, lbs. c	......	......	5,669,485	7,164,760	5,403,335	6,759,108
Exports (Bureau of Foreign & Dom. Commerce)						
Chemicals and related prod. d..	Exports and Imports No Longer Available					
Crude sulfur d	......	......	......	......	......	......
Coal-tar chemicals d	......	......	......	......	......	......
Industrial chemicals d	......	......	......	......	......	......
Imports						
Chemicals and related prod. d..	......	......	......	......	......	......
Coal-tar chemicals d	......	......	......	......	......	......
Industrial chemicals d	......	......	......	......	......	......
Employment (U. S. Dept. of Labor, 3 year av., 1923-25 = 100) Adjusted to 1937 Census Totals						
Chemicals and allied prod., including petroleum	156.6	135.9	158.8	135.9	158.2	131.6
Other than petroleum	162.7	139.3	165.3	139.6	164.8	134.6
Chemicals	192.1	166.8	193.2	162.4	192.5	159.3
Explosives	No Longer Available		....	..	......	......
Payrolls (U. S. Dept. of Labor, 3 year av., 1923-25 = 100) Adjusted to 1937 Census Totals						
Chemicals and allied prod., including petroleum	224.2	165.5	223.0	158.5	218.9	149.1
Other than petroleum	238.4	171.5	238.4	163.4	231.1	154.0
Chemicals	297.7	221.8	293.2	208.3	287.8	201.7
Explosives	No Longer Available		......	......	......	......
Price index chemicals*	......	......	96.4	86.4	96.4	85.9
Drugs & Pharmaceuticals* ...	......	......	126.7	97.5	126.5	97.2
Fert. mat.*	......	......	79.2	71.0	79.5	70.4
Paint and paint mat.	......	......	100.6	88.7	100.8	87.4
FERTILIZER:						
Exports (long tons, Nat. Fert. Association)						
Fertilizer and fert. materials ...	Exports and Imports No Longer Available					
Total phosphate rock	......	......	......	......	......	......
Total potash fertilizers	......	......	......	......	......	......
Imports (long tons, Nat. Fert. Association)						
Fertilizer and fert. materials ...	......	......	......	......	......	......
Sodium nitrate	......	......	......	......	......	......
Total potash fertilizer	......	......	......	......	......	......

INDUSTRIAL TRENDS



Business: Activity in business and industry expanded somewhat during past month, although at a somewhat slower rate than was earlier expected. The Federal Reserve Board's seasonally adjusted index of industrial production stood at 177 in June and is estimated at about 180 for July. The **New York Times** weekly business index went from 106.7 for week ending June 27 to 108.4 for week ending July 25. According to the Department of Labor, civil non-agricultural employment increased 152,000 between mid-May and mid-June to a total of 41,415,000, the largest total on record.

Steel: Production declined somewhat in June but increased to earlier high levels in July.

According to the American Iron & Steel Institute the steel ingot capacity of the U. S. was increased by 628,350 net tons during first half of 1942, making an annual capacity as of July 1 of 89,198,320 net tons. Not satisfied with this, however, the Iron and Steel Branch of WPB has recommended a steel ingot capacity of 98,279,970 tons by the middle of 1943.

In spite of these plans there is still the serious shortage of scrap. The nation-wide scrap drive now under way has not been functioning long enough to show definite results.

Carloadings: Volume of freight traffic was maintained in large volume during June and the first half of July. The number of cars loaded was below the level that prevailed a year ago, however, reflecting a sharp reduction in carloadings in less-than-carload lots as a result of orders by the Coordinator of Transportation which raised the minimum permissible weights for such loadings and thereby effected a fuller utilization of existing equipment.

Electric Output: The Edison Insti-

State of Chemical Trade

Current Statistics (July 31, 1942)—p. 110

tute reports that the production of electricity by the light and power industry of the U. S. for week ending Aug. 1, 1942 was 3,649,146,000 k. w. h. which represents a gain of 11.8% over the same period in 1941. During the last 5 weeks the gain over last year has averaged about

Automotive: The industry continues its progress toward almost total conversion to armament and war supplies. According to the Automotive Council for War Production the industry has been able to accelerate war production to the point where it is delivering $12,000,000 worth of military equipment a day.

Construction: All previous construction records were broken in June, according to F. W. Dodge Corp. Building and engineering contracts awarded last month in the 37 eastern states amounted to $1,190,264,000. This was nearly 57% more than dollar volume of August, 1941, the previous all-time high. Comparisons of these two record months indicate roughly the impact of the war on the construction program: industrial building contracts in June were double the dollar volume of last August; heavy engineering construction nearly doubled; non-residential building, other than commercial and industrial work, increased three-fold. On the other hand, commercial building contracts in June were a third less in dollar volume than in August last year, and residential building was down 20%.

The June, 1942 volume brought the total for first 6 months to $3,723,725,000, a record-breaking figure, 46% over same period in 1941.

Commodity Prices: Prices of most commodities both at wholesale and retail showed little change. Prices of cotton, wool, and some other agricultural commodities, which had declined in early part of June, advanced from middle of June to middle of July. About 20 additional maximum price schedules were announced covering a wide variety of commodities. On the other hand, Federal approval was given for higher prices on various processed fruits and vegetables, textile products, petroleum products sold on the East Coast, and services supplied to consumers.

Retail Trade: Smaller sales were reported by both department stores and mail order houses. Regional comparisons in the Southwest ranged from a rise of 1% to a decline of 5%; in the Northwest from a rise of 1% to a decline of 3%; in Pacific Coast region from rise of 5% to decline of 3%. Other percent decreases were: East 7 to 14, New England 4 to 10, Middle West 5 to 8, South 1 to 5.

MONTHLY STATISTICS (cont'd)

FERTILIZER: (Cont'd)	May 1942	May 1941	April 1942	April 1941	Mar. 1942	Mar. 1941
Superphosphate e (Nat. Fert. Association)						
Production, total	383,617	341,348	381,619	330,113	423,921	363,233
Shipments, total	463,299	538,863	805,942	1,066,191	836,743	662,592
Northern area	264,886	370,551	407,551	509,920	325,782	239,439
Southern area	198,413	168,312	398,391	556,271	510,961	423,153
Stocks, end of month, total	802,975	863,633	......	......	1,251,554	1,707,794
Tag Sales (short tons, Nat. Fert. Association)						
Total, 17 states	......	......	766,503	1,461,189	1,155,809	1,487,101
Total, 12 southern	......	......	679,190	1,390,782	1,062,473	1,367,307
Total, 5 midwest	......	......	87,313	70,407	93,336	119,794
Fertilizer employment *i*	123.8	127.1	155.1	178.7	165.6	140.9
Fertilizer payrolls *i*	147.5	127.4	179.8	176.9	175.9	116.9
GENERAL:						
Acceptances outst'd'g *f*	177	219	182	217	190	211
Coal prod., anthracite, tons	......	......	5,153,000	3,198,000	5,081,000	4,595,000
Coal prod., bituminous, tons	......	......	49,000,000	5,975,000	47,400,000	47,996,000
Com. paper outst'd'g *f*	373	274	388	240	$384	$263
Failures, Dun & Bradstreet	938	1149	1,048	1,211	1,048	1,211
Factory payrolls *i*	192.6	144.1	186.6	134.7	182.9	131.2
Factory employment *i*	137.0	124.9	136.1	122.6	135.0	119.9
GENERAL MANUFACTURING:						
Automotive production	......	......	......	......	94,510	507,834
Boot and Shoe prod., pairs	40,770,899	41,087,435	45,266,292	45,105,652	45,105,652	43,153,556
Bldg. contracts, Dodge *j*	......	......	......	......	$610,799	$479,903
Newsprint prod., U. S. tons	......	......	......	......	80,923	87,376
Newsprint prod., Canada, tons.	......	......	......	......	295,835	275,769
Glass containers, gross‡	......	......	6,921,000	3,325,000	6,935,000	5,128,000
Plate glass prod., sq. ft.	......	......	......	......	5,564,717	18,286,400
Window glass prod., boxes	......	......	......	......	1,583,000	1,417,000
Steel ingot prod., tons	......	......	7,122,313	6,754,179	7,392,911	7,124,003
% steel capacity	......	......	96.3	97.6	98.2	99.6
Pig iron prod., tons	No Longer Available		......	......	......	......
U.S. cons'pt. crude rub., lg. tons	No longer Available		......	......	......	......
Tire shipments	......	......	......	......	1,027,021	5,517,255
Tire production	......	......	......	......	1,156,410	5,685,559
Tire inventories	......	......	......	......	4,809,123	10,148,861
Cotton consumpt., bales	957,015	923,518	998,754	920,950	966,631	854,767
Cotton spindles oper.	23,120,666	22,980,286	23,100,202	22,787,396	23,096,479	22,806,104
Wool consumption *s*	47.0	57.0	52.0	52.8	52.9	53.0
Rayon deliv., lbs.	37,600,000	40,200,000	37,600,000	38,700,000	39,900,000	35,400,000
Rayon employment *i*	312.4	323.5	310.4	317.9	313.2	312.2
Rayon payrolls *i*	391.3	356.2	387.9	342.3	394.4	332.9
Soap employment *i*	87.3	92.2	91.8	91.6	92.6	90.7
Soap payrolls *i*	131.3	125.7	136.9	115.6	137.3	114.8
Paper and pulp employment *i*	128.3	122.7	129.8	120.3	129.7	118.5
Paper and pulp payrolls *i*	171.7	145.6	172.1	139.1	175.7	136.4
Leather employment *i*	93.5	89.6	95.7	90.0	97.6	89.1
Leather payrolls *i*	122.1	97.6	122.1	95.1	123.7	94.3
Glass employment *i*	123.3	124.0	125.8	121.8	126.1	119.5
Glass payrolls *i*	164.9	150.3	165.5	143.5	165.4	140.5
Rubber prod. employment *i*	94.7	106.4	95.2	105.0	98.9	102.8
Rubber prod. payrolls *i*	134.8	128.7	130.3	122.3	132.3	119.5
Dyeing and fin. employment *i*	135.8	141.2	138.2	143.3	138.3	142.0
Dyeing and fin. payrolls *i*	151.9	133.9	157.0	134.7	151.7	133.3
MISCELLANEOUS:						
Oils & Fats Index ('26 = 100)[1]	......	......	......	......	......	93.7
Gasoline prod., *p*	......	......	47,528	53,768	52,902	53,408
Cottonseed oil consumpt., bbls.	......	......	......	......	225,288	317,622
PAINT, VARNISH, LACQUER, FILLERS:						
Sales 680 establishments, dollars	......	......	$50,530,225	$51,963,528	$48,070,117	$40,185,294
Trade sales (580 estbts.) dollars	......	......	$25,839,940	$27,972,286	$23,718,650	$19,565,515
Industrial sales, total, dollars	......	......	$19,009,421	$19,266,308	$18,897,968	$17,033,354
Paint & Varnish, employ. *i*	135.8	141.4	138.7	137.4	140.7	132.9
Paint & Varnish, payrolls *i*	175.7	170.4	177.1	157.9	179.4	147.4

a Bureau of Mines; *b* Crude and refined plus motor benzol, Bureau of Mines; *c* Based on 1 lb. of gun cotton to 7 lbs. of solvent, making an 8-lb. jelly; *d* 000 omitted, Bureau of Foreign & Domestic Commerce; *e* Expressed in equivalent tons of 16% A.P.A.; *f* 000,000 omitted at end of month; *i* U. S. Dept. of Labor, 3 year average, 1923-25 = 100, adjusted to 1937 Census totals; *j* 000 omitted, 37 states; *p* Thousands of barrels, 42 gallons each; *q* 680 establishments, Bureau of the Census; *s* 53 manufacturers, Bureau of the Census; *r* Classified sales, 580 establishments, Bureau of the Census; *s* 53 manufacturers, Bureau of the Census, in millions of lbs.; *t* 387 identical manufacturers, Bureau of the Census, quantity expressed in dozen pairs; *v* In thousands of bbls., Bureau of the Census; ** Indices, Survey of Current Business, U. S. Dept. of Commerce; *z* Units are millions of lbs.; ‡ 000 omitted; * New series beginning March, 1940; [1] Revised series beginning February, 1940.

Air Reduction Profit $1,322,875

Air Reduction Co. Inc., and wholly-owned subsidiaries report for the quarter ended June 30, 1942, net profit of $1,322,875 after depreciation, amortization and provision of $2,828,887 for federal taxes based upon rates prevailing under Revenue Act of 1941 and $800,000 for contingencies, including unknown 1942 taxes. Above net is equal to 49 cents a share on 2,713,337 shares of common stock outstanding.

This compares with an adjusted net profit of $1,747,504 or 64 cents a share in the June quarter of previous year, when a provision of $1,938,234 was made for federal taxes. For the first quarter of 1942 net profit was $1,495,548 or 55 cents a share, after provision of $2,317,711 for federal taxes and $525,000 for contingencies.

Net profit for the six months ended June 30, 1942, was $2,818,423, equal to $1.04 a share, against an adjusted net profit of $3,337,756 or $1.23 a share in the first six months of 1941.

Monsanto Nets $1.38 a Share

Monsanto Chemical Co. and American subsidiaries report for the six months ended June 30, 1942, a net profit of $2,133,765 after depreciation, obsolescence, minority interest and federal income and excess profits taxes, equal after preferred dividend requirements, to $1.38 a share on 1,241,694 shares of common stock, exclusive of 21,263 treasury shares.

This compares with a net profit of $3,270,943 or $2.38 a share in the six months ended June 30, 1941.

Provision for federal taxes for the first half of 1942, amounted to $6,686,784, or $1,557,380 for income, $3,524,404 for excess profits and $1,605,000 for probable additional taxes.

Westvaco Earns $501,661

Westvaco Chlorine Products Corp. and subsidiaries report for the six months ended June 30, 1942, net profit of $501,661 after charges and federal income and excess profits taxes, equal after dividend requirements on the $4.50 preferred stock, to $1.05 a share on 353,132 shares of common stock.

This compares with an adjusted net profit of $632,529 or $1.41 a common share in the first half of 1941.

Provision for federal income and excess profits taxes for the 1942 period was based on rates adopted by the House of Representatives (45% normal and surtax, 90% excess profits tax) and included in the second quarter necessary adjustment for the six months taxes, the report states.

Dividends and Dates

Name	Per Share	Stock Record	Payable
Dow Chem. Co., com.,			
(quar.)	$ .75	8-1	8-15
5% pref. (quar.)	1.25	8-1	8-15
Harshaw Chem. Co.,			
4½% pref.			
(quar.)	1.125	8-15	9-1
Monsanto Chem. Co.,			
com. (quar.)			
$4.50 pref. A			
(s. a.)	2.25	11-10	12-1
$4.50 pref. B			
(s. a.)	2.25	11-10	12-1
$4.00 pref. C			
(s. a.)	2.00	11-10	12-1
National Chem. & Mfg.			
(quar.)	.15	7-15	8-1
National Gypsum Co.,			
$4.50 pref. (quar.)	1.125	8-13	9-1
National Lead Co.,			
com. (quar.)	.125	9-11	9-30
7% pref. A (quar.)	1.75	8-28	9-15
6% pref. B (quar.)	1.50	10-16	11-2
New Jersey Zinc Co.,			
(irregular)	.50	8-20	9-10
Stand. Silica Corp.	.20	8-5	8-15
United Gas Improv. Co.,			
com.	.10	8-31	9-30
$5 pref. (quar.)	1.25	8-31	9-30
Virginia-Carolina Chemical Co.			
6% partic. pref.	5.00	8-10	8-20
Westvaco Chlorine			
Prod. Corp.	.35	8-10	9-1

Earnings Statements Summarized

Company:	Net income 1941	Net income 1940	Common share earnings 1941	Common share earnings 1940
Abbott Laboratories—Six months, June 30	$ 868,406	$ 986,181	$1.07	$1.27
Air Reduction Co.—Six months, June 30	2,818,423	3,337,756	1.04	1.23
Air Reduction Co.—June 30 quarter	1,322,875	1,747,504	.49	.64
American Viscose Corp.—Six months, June 30	2,422,805	3,375,201	1.05	1.60
Amer. Zinc, Lead & Smelt.—Six months, June 30	557,580	389,296	.57	.32
Amer. Zinc, Lead & Smelt.—June 30 quarter	255,461	165,843	.25	.12
Armstrong Cork Co.—Six months, June 30	1,405,003	2,492,942	.92	1.69
Corn Products Refining Co.—Six months, June 30	4,160,660	4,878,641	1.30	1.59
Federal Min. & Smelt. Co.—Six months, June 30	703,480	583,147	2.85	2.36
Federal Min. & Smelt. Co.—June 30 quarter	371,158	273,079	1.50	1.11
Koppers Co.—Twelve months, June 30	5,688,673	4,690,805	4.49	3.49
Lindsay Light & Chem. Co.—Six months, June 30	26,768	73,143	.30	1.07
New Jersey Zinc Co.—June 30 quarter	2,152,984	2,700,391	1.09	1.37
New Jersey Zinc Co.—Six months, June 30	4,444,318	5,513,900	2.26	2.81
Parke, Davis & Co.—Six months, June 30	2,781,563	3,348,067	.57	.68
Parke, Davis & Co.—Twelve months, June 30	7,439,959	8,002,474	1.52	1.63
Procter & Gamble Co.—Year, June 30	21,469,214	27,582,081	3.25	4.21
St. Joseph Lead Co.—Six months, June 30	2,142,208	2,518,957	1.09	1.29
Staley Mfg. Co., A. E.—Six months, June 30	774,211	1,038,153	....	....
Texas Gulf Sulphur Co. Inc.—June 30 quarter	2,368,653	2,598,640	.62	.68
Union Carbide & Carbon Corp.—‡‡Six mos., June 30	¶17,028,244	21,342,133	1.83	2.30
Union Carbide & Carbon Corp.—June 30 quarter	7,611,940	10,796,498	.82	1.16
United Chemicals, Inc.—First six months	109,050	105,401	....	....
United Gas Improvement Co.—June 30 quarter	4,021,359	5,449,918	.13	.19
United Gas Improvement Co.—Twelve mos., June 30	18,338,085	25,992,554	.62	.95
U. S. Rubber Co.—Six months, June 30	1,554,841	6,203,314	p2.39	2.07
Vulcan Detinning Co.—June 30 quarter	97,972	137,878	2.33	3.55

a On Class A shares; *b* On Class B shares; *c* On Combined Class A and Class B shares; *d* Deficit. *f* No common dividend; *j* On average number of shares; *k* For the year 1940; *b* On Preferred stock; On Class A shares; *y* Amount paid or payable in 12 months to and including the payable date of the most recent dividend announcement; ‡ Indicated quarterly earnings as shown by comparison of company's reports for the 6 and 9 months periods; § Plus extras; *n* Preliminary statement; *h* On shares outstanding at close of respective periods; ** Indicated quarterly earnings as shown by comparison of company's reports for 1st quarter of fiscal year and the six months period; ‡‡ Indicated earnings as compiled from quarterly reports; † Net loss; * Not available; ¶¶ Before interest on income notes; *x* Paid on or declared in last 12 months plus extra stock; *w* Last dividend declared, period not announced by company.

Price Trend of Representative Chemical Company Stocks

	June 27	July 3	July 11	July 18	July 25	Net gain or loss last mo.	Price on July 26, 1941	1942 High	1942 Low
Air Reduction Co.	31	31	33⅞	33	33	+ 2	43¾	38¼	29½
Allied Chemical & Dye Corp.	132	135	138	135½	134½	+ 2½	165	149	118½
Amer. Agric. Chem.	19¼	19	20¾	21	20⅞	+ 1⅝	18⅞	23⅝	18¾
Amer. Cyanamid "B"	33¾	....	35½	35	34⅝	+ 1⅛	39¾	41⅞	28⅝
Columbia Carbon	65⅜	69¾	73	73½	73	+ 7⅝	82	74	51
Commercial Solvents	8¼	8¼	8⅝	8½	8⅝	+ ⅜	11¾	9¾	7¼
Dow Chemical Co.	114⅝	113	116⅞	115¾	114	— ⅝	135	124¼	95
du Pont	113	114	120¾	119¾	116¾	+ 3¾	156½	144	102¾
Hercules Powder	58	58	61½	61½	61¼	+ 3¼	79½	72	51
Mathieson Alkali Works	21½	22	22½	21	20	— 1½	29	29½	19½
Monsanto	75⅛	77¼	76¾	75⅛	77	+ 1⅞	91	91	66
Standard Oil of N. J.	34¾	35¾	38⅜	37⅛	38½	+ 3¾	45	42¼	30½
Texas Gulf Sulphur	30⅛	30⅛	31¼	31¾	32	+ 1⅞	37½	34⅞	28
Union Carbide & Carbon	65	66¾	69⅞	68	67½	+ 2½	78½	74¾	58
United Carbon Co.	45	46	46	46	46	+ 1	..	46	37
U. S. Industrial Alcohol	26½	25½	29	29½	29	+ 2½	31⅞	34¼	24½

Penn. Salt Reports for Year

Pennsylvania Salt Manufacturing Co. reports for the fiscal year ended June 30, 1942, a net profit of $1,421,171 after charges, federal taxes and a reserve of $200,000 for contingencies, including possible additional taxes. The above net is equal to $9.47 a share on the 150,000 shares of capital stock outstanding.

This compares with a net profit in the preceding year of $1,649,038 or $10.99 a share.

Interchemical Nets $1.18

Interchemical Corp. and wholly-owned subsidiaries in a report for the six months ended June 30, 1942, subject to audit, show a net profit of $538,285 after interest, depreciation and provisions of $700,000 for existing federal income and excess profits taxes and $200,000 for anticipated increases in federal taxes. Above net is equal after preferred dividend requirements, to $1.18 a share on 290,320 shares of common stock.

This compares with a net profit for the six months ended June 30, 1941, after provisions of $445,000 for federal income and excess profits taxes at then existing rates plus $250,000 for anticipated increases in taxes, of $696,468, equal to $1.73 a share on common.

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Chemical Stocks and Bonds

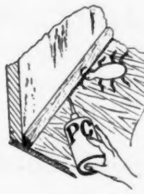
July 1942 Last	1942 High	1942 Low	1941 High	1941 Low	1940 High	1940 Low	Stocks	Par $	Shares Listed	Dividends 1941*	Earnings** $-per-share-$ 1941	1940	1939
NEW YORK STOCK EXCHANGE													
44¾	49⅞	37	55¾	46	70¼	49¼	Abbott Labs.	No	755,204	1.60	2.90	2.89	2.61
32¾	38¼	29½	45	34⅝	58⅛	36½	Air Reduction	No	2,736,855	2.00	2.62	2 38	1.98
131	149	118½	167½	135	182	135½	Allied Chem. & Dye	No	2,401,288	6.00	9.67	9.43	9.50
20	23⅝	18¾	22⅞	14¾	21	12⅛	Amer. Agric. Chem.	No	627,981	1.45	1.79	1.45	1.22
31¼	35	27⅝	35	26	35½	23	Archer-Dan.-Midland	No	545,416	1.85	5.69	5.42	3.02
45	70	43	72¼	61	80½	57	Atlas Powder Co.	No	254,827	4.50	6.13	5.71	3.82
115¼	116	111	121	111	124¾	112⅞	5% conv. cum. pfd.	100	68,597	5.00	27.77	26.01	18.94
20	21¼	15	29¾	18½	35½	20	Celanese Corp. Amer.	No	1,376,551	2.00	3.43	2.90	3.53
114¾	120⅝	110	122¼	116¾	121	105½	prior pfd.	100	164,818	7.00	35.08	38.69	38.67
14⅝	15	11½	16¼	10⅞	20	10⅛	Colgate-Palm.-Peet	No	1,962,087	0.50	3.09	1.62	2.74
72¾	74	51	83	64	98¾	71	Columbian Carbon	No	537,406	4.70	6.57	5.71	5.32
8¾	9¾	7¼	11⅞	7½	16⅝	8	Commercial Solvents	No	2,636,878	0.55	.99	.91	.61
49¾	55¾	42¼	55¾	42¼	65⅛	40¼	Corn Products	25	2,530,000	3.00	3.37	3.10	3.32
174	174	159	182½	164	184	165	7% cum. pfd.	100	245,738	7.00	41.78	7.23	7.70
17	21	14	21	12¼	23¼	12⅛	Devoe & Rayn. A.	No	95,000	1.00	7.08	1.14	2.08
110	124¼	95	141¾	111⅛	171	127¼	Dow Chemical	No	1,135,187	3.00	6.58	6.65	3.76
113¼	144	102¾	164¾	125⅛	189¼	146½	DuPont de Nemours	20	11,065,762	7.00	7.50	7.23	7.70
124¾	126½	120	127	120⅞	129¾	114	4½% pfd.	No	1,688,850	4.50	53.53	51.48	52.25
131	141	108	145½	120¼	166¾	117	Eastman Kodak	No	2,488,242	6.00	8.57	7.96	8.55
172½	176	170	182½	160	180	155	6% cum.	100	61,657	6.00	350.14	325.62	337.65
33	38¾	27	41	32½	39¼	24¾	Freeport Sulphur	10	796,380	2.00	3.95	3.81	2.76
4	5¾	4	7⅛	4⅞	10	5⅛	Gen. Printing Ink	1	735,960	0.65	1.00	.86	.94
14	15	12½	17⅞	11	19¾	11	Glidden Co.	No	829,989	1.50	3.08	1.56	1.70
40	44	37¾	46	35	45	30	4½% cum. pfd.	50	199,940	2.25	15.08	8.64	9.27
91	93½	79¼	96	76	113¼	89⅞	Hazel Atlas	25	434,409	5.00	6.63	5.98	6.60
62	72	51	80¼	65¼	100½	69	Hercules Powder	No	1,316,710	3.00	4.23	4.01	3.65
129	132	125	132½	123½	133½	126¼	6% cum. pfd.	100	96,194	6.00	69.71	66.38	60.87
23	27	21	29⅞	20¾	29	16⅝	Industrial Rayon	No	759,325	2.50	3.04	3.51	1.77
19¼	23½	19¼	27	19	47⅝	21¼	Interchem.	No	290,320	1.60	6.01	2.47	4.10
109	111½	103	113¼	107	113	91	6% pfd.	100	65,661	6.00	32.79	16.99	24.27
7⅛	7⅝	3½	..	..	..	..	Intern. Min. & Ch.	5	473,981	...	...	...	...
46	46	38	..	..	..	..	4% cum. pfd.	100	100,000	...	...	...	...
26¼	28¾	24⅛	31⅝	23	38⅞	19⅝	Intern. Nickel	No	14,584,025	2.00	2.22	2.30	2.39
41	48¼	39	49	38¼	39⅝	26⅞	Intern. Salt	No	240,000	3.00	3.76	3.98	1.92
20¾	21¼	17½	22	17¼	23¾	14⅝	Kellogg (Spencer)	No	509,213	1.70	3.66	2.74	1.30
24⅛	26½	20½	45⅝	19⅛	53⅝	30	Libbey Owens Ford	No	2,513,258	3.50	3.52	3.97	3.21
13½	15½	11⅜	16⅝	13	18⅝	10⅛	Liquid Carbonic	No	728,100	1.00	2.92	2.21	1.62
19½	29½	19½	31¼	24⅛	32¾	21	Mathieson Alkali	No	828,171	1.50	1.90	1.72	1.12
73	91	66	94	77	119	79	Monsanto Chem.	No	1,241,816	3.00	4.90	4.32	4.01
114	117½	110	118⅛	112	119	110	4½% pfd. A.	No	50,000	4.50	38.43	57.38	54.29
115	119	112	123	115	122	113½	4½% pfd. B.	No	50,000	4.50	38.43	57.38	54.29
108½	110¾	102½	113½	108⅞	...	...	4 % pfd. C.	No	50,000	4.50	38.43	...	...
13¾	16¼	11⅞	19¼	12¼	23½	14⅛	National Lead	10	3,090,664	0.50	1.10	1.34	1.23
157	168	145	176	100½	176	160	7% cum. "A" pfd.	100	213,793	7.00	24.68	28.54	27.04
135	146	129	154	138	153¾	132	6% cum. "B" pfd.	100	103,277	6.00	49.99	59.46	55.30
33½	35	29½	36	26	44	28¾	National Oil Products	4	179,829	1.95	4.11	3.92	3.89
7⅞	11⅜	7¼	11⅞	5⅝	14¼	6⅛	Newport Industries	1	621,359	0.75	1.14	0.50	0.66
50¾	54	43¼	54	38¾	64⅝	42	Owens-Illinois Glass	12.50	2,661,204	2.50	3.40	2.71	3.17
48¼	52	42	61½	47½	71¾	53	Procter & Gamble	No	6,409,418	2.00	4.20	4.37	3.80
120⅜	121½	115	120	115	118½	112½	5% pfd.	100	169,517	5.00	324.38	336.78	298.55
13	14¾	10⅛	16¾	10⅛	13⅛	7⅝	Shell Union Oil	No	13,070,625	1.00	1.33	1.05	0.77
25¼	28½	19⅜	35¼	18⅞	23¼	12¼	Skelly Oil	No	981,349	1.50	6.03	3.28	1.99
24¼	27½	20	34⅛	24⅞	29	20¾	S. O. Indiana	25	15,272,020	1.00	3.17	2.20	2.24
37¾	42¼	30½	46⅞	33	46½	29⅞	S. O. New Jersey	25	27,278,666	1.00	5.15	4.54	3.27
8½	9⅜	7½	9⅝	6	9¼	4¼	Tenn. Corp.	5	853,696	1.00	1 60	1.36	0.41
35⅞	39¼	30	46⅝	34½	47⅝	33	Texas Corp.	25	10,876,882	2.00	4.77	2.90	3.02
31¼	34⅞	28	38⅝	30⅛	37¼	26⅞	Texas Gulf Sulphur	No	3,840,000	2.50	2.35	2.38	2.04
67⅛	74¾	58	79⅞	60	88⅝	59⅞	Union Carbide & Carbon	No	9,277,288	3.00	4.53	4.55	3.86
45	46	37	52	35	65⅝	42½	United Carbon	No	397,885	3.00	4.30	3.36	3.81
29	34¼	24½	34¼	20	28	14	U. S. Indus. Alcohol	No	391,238	1.00	...	2.73	1.06
16	20⅛	14¼	34⅛	15½	43⅞	25	Vanadium Corp. Amer.	No	405,706	1.50	3.03	2.85	3.25
21⅝	25½	18¾	27¼	20	31½	14	Victor Chem.	5	750,000	1.40	1.59	1.57	1.59
1⅝	2⅛	1	2½	⅝	4⅛	1⅝	Virginia-Caro. Chem.	No	486,122	...	—1.89	—1.36	—1.57
34½	37	22½	29½	18⅞	31⅝	14	6% cum. part. pfd.	100	213,052	1.00	1.69	2.89	2.41
27½	31½	22	36½	27¼	38⅛	27¾	Westvaco Chlorine	No	553,132	1.85	2.92	2.96	2.91
103¾	106½	100½	112	105	109⅞	108	cum. pfd.	No	58,415	4.50	22.19	21.98	...
NEW YORK STOCK EXCHANGE													
34½	41⅞	28⅝	42⅝	31	39⅞	26	Amer. Cyanamid "B"	10	2,618,387	0.60	2.42	2.44	2.07
8	8	6⅞	7¾	6⅜	8⅛	5	Duval Texas Sulphur	No	500,000	1.25	1.42	1.16	1.25
69½	88½	67½	90	65	92	60	Heyden Chem. Corp.	100	104,983	3.00	9 04	7.86	5.98
70¼	73½	55¼	96¼	55	104	65	Pittsburgh Plate Glass	25	2,188,040	5.00	6.82	6.30	4.94
72¼	78¼	59¾	84	61	100	62½	Sherwin Williams	25	638,927	3.00	7.83	6.57	5.96
114½	115	110	115⅛	108½	114¾	106	5% cum. pfd.	50	122,289	5.00	47.82	39.49	35.08
PHILADELPHIA STOCK EXCHANGE													
139½	175½	125	185	162	192	158¾	Pennsylvania Salt	50	150,000	8.00	10.99	11.51	8.63

July 1942 Last	1942 High	1942 Low	1941 High	1941 Low	1940 High	1940 Low	Bonds	Date Due	Int. %	Int. Period	Outstanding $
NEW YORK STOCK EXCHANGE											
102½	104¼	101¾	104½	100¾	105¼	100⅛	Amer. I. G. Chem. Conv.	1949	5½	M-N	$22,400,000
44	45	34	42¼	26⅛	41	27½	Anglo Chilean Nitrate inc. deb.	1967	4½	J	10,400,000
44	44⅛	35	40	25⅝	39¾	27	Lautaro Nitrate inc. deb.	1975	4	J-D	27,200,000
97½	97⅞	95¾	99⅞	94¾	100¼	93½	Shell Union Oil	1954	2½	J-J	85,000,000
104⅞	105½	103	106¾	102⅛	107	101⅛	Standard Oil Co. (New Jersey) deb.	1961	3	J-D	85,000,000
104½	105⅝	103⅜	150⅝	103	107	100⅝	Standard Oil Co. (New Jersey) deb.	1953	2¾	J-J	50,000,000
105⅝	106	104½	107¾	102⅞	108¼	102	Texas Corp.	1959	3	A-O	40,000,000

* Including extras paid in cash.
** For either fiscal or calendar year.
x New stock.

New Trade Marks of the Month

Venomoth • POISON TO MOTHS • 436,470



436,521

TURBANWAV 438,231

5 STAR 440,214

SNO-SEAL 440,583

BEVIMIN 442,532

VITAMINTS 445,347

CARNÉE 445,652

Victory 447,396

COSMATA 448,755

NATRURAL GAS 449,568

RY-O-LEX 450,078

ROTO-FINISH 451,124

1-2-3 451,603

PERMANESIUM 451,652

451,653

SUDZENE 452,193

Firegan 452,387

PARKE, DAVIS & CO. 452,456

AMIDEX 452,465

ASCORBILAC 452,670

VIT-MIN 452,699

DALADON 452,810

AGADINE 452,862

PREMARIN 452,875-452,899

PHYTANIUM-BLENDED PENTRATE 452,903

HARCOSEALS 452,960

BUTASAN 452,964

METHASAN 452,966

PEPTIZENE 452,967

BEHICLE 452,975

ATHLETIC 452,004

TALLSO 453,022

PANTOCAL 453,047

Trade Mark Descriptions†

436,470. Saul Gottlieb, doing business as The Venomoth Company; Los Angeles, Calif.; Sept. 28, '40; for chemical moth-proof properties; since Mar. 1, '35.

436,521. P. C. Products Company; St. Louis, Mo.; Sept. 30, '40; for insecticides; since Sept. 26, 1940.

438,231. James O. Gilchrist, doing business as Turbanwav Company, Iowa City, assignor to Turbanwav Company, Inc.; Washington, D. C.; Nov. 23, '40; for hair waving solutions; since Nov. 9, '40.

440,214. Silver Seal Products, Inc.; Denver, Colo.; Feb. 1, '41; for liquid cleaning compound for general use; since Jan. 2, '41.

440,583. Ome Daiber; Seattle, Wash; Feb. 12, '41; for preservative compound for leather goods, waterproofing compound for leather goods, wax waterproofing compound for leather goods, leather dressing compounds, leather polish; since Jan. 15, '37.

442,532. Loeser Laboratory, Inc.; New York, N. Y.; (McKesson Laboratory, Inc.) assignor to Loeser Labs, Inc; Apr. 12, '41; for thiamin hydrochloride; since Oct. 10, '38.

445,347. Vitamint Corporation; Boston, Mass.; July 14, 1941; for medicinal preparations; since July 1, 1926.

445,652. The Dill Company; Norristown, Pa.; July 26, '41; for liquid shampoo soap; since Dec. 13, '40.

447,396. Roch D. Kawerk, doing business as Victory Products Co.; Birmingham, Ala.; Sept. 29, '41; for white shoe cleaner; since Sept. 19, '41.

448,755. Cosmata, Inc.; Long Island City, N. Y.; Nov. 19, '41; for soaps; since Mar. 4, '41.

449,568. Frank J. Dechant, doing business as Natural Gas Company; Denver, Colo.; Dec. 18, '41; for liquid gases, such as butane, pentane and methane; since Sept. 9, '41.

450,078. Orange J. Salisbury; Pasadena, Calif.; Jan. 8, '42; for light weight granular aggregate and heat insulating medium made from expanded eruptive rock; since Sept. 13, '41.

451,124. The Sturgis Products Company; Sturgis, Mich.; Feb. 20, '42; for aggregates comprising crushed rock fragments for use in tumbling barrels for polishing purposes; since Sept. 1, '40.

451,603. Newell Gutradt Company, doing business as Strykers Soap Co.; San Francisco, Calif.; Mar. 13, '42; for abrasive cleanser for general household purposes; since Feb. 19, '42.

451,652. The Permanente Metals Corp.; Oakland, Calif.; Mar. 16, '42; for magnesium and magnesium alloys; since Jan. 20, '42.

451,653. The Permanente Metals Corp.; Oakland, Calif.; Mar. 16, '42; for magnesium and magnesium alloys; since June 20, '42.

452,193. The La Renz Company; Cleveland, Ohio; Apr. 7, '42; for cleaning compound and other articles of textile; since Jan. '24.

452,387. Concrete Materials Co.; Sioux Falls, S. Dakota; Apr. 17, '42; for crushed quartz refractory; since Jan. 10, '40.

452,456. Parke, Davis & Company; Detroit, Mich.; Apr. 20, '42; for various chemicals and pharmaceuticals; since '75.

452,465. Binney & Smith Company; New York, N. Y.; Apr. 21, '42; for plasticizer with activating properties for use in the manufacture of rubber and rubber-like compounds; since Apr. 6, '42.

452,670. Horlick Laboratories, Inc.; Racine, Wisc.; Apr. 29, '42; for medicinal tablets containing ascorbic acid; since Apr. 10, '42.

452,699. Scientific Nutrition Corporation; Bloomfield, N. J.; Apr. 30, '42; for vitamins and minerals indicated in case of nutritional deficiencies; since Aug. 1, '41.

452,810. Revere Copper and Brass, Inc.; New York, N. Y.; May 5, '42; for zinc base alloys; since Mar. 25, '42.

452,862. Latan Chemicals, Incorporated; North Hackensack, N. J.; May 7, '42; for group compounds representing combinations of polyamines with synthetic liquid plasticizers protecting the color of all-acetate and acetate-mixed fabrics against gas fading and shade changes without impairing the lightfastness of the color of either the acetate or the rayon, cotton or wool, etc. fibres; since Mar. 14, '42.

452,903. Heatbath Corporation; Indian Orchard, Mass; May 9, '42; for salt compositions for metal treating baths, the purpose of which is to impart surface color to metals; since Sept. 1, '41.

452,875. Standard Oil Company of California; Wilmington, Del., and San Francisco, Calif.; May 7, '42; for mineral oils for parasiticidal sprays and medicinal uses; since Feb. 26, '42.

452,899. Ayerst, McKenna & Harrison, (U.S.), Limited; Rouses Point, N. Y.; May 9, '42; for pharmaceutical preparations for the treatment of ovarian deficiencies; since Feb. 24, '42.

452,960. The G. F. Harvey Company; Saratoga Springs, N. Y.; May 12, '42; for powdered digitalis leaf hermetically sealed in oil put up in capsule form; since Mar. 26, '42.

452,964. Monsanto Chemical Company; St. Louis, Mo.; May 12, '42; for compounds used as vulcanization accelerators in the curing of rubber articles; since Apr. 1, '42.

452,966. Monsanto Chemical Co.; St. Louis, Mo.; May 12, '42; for compounds used as vulcanization accelerators in the curing of rubber articles; since Apr. 29, '42.

452,967. Monsanto Chemical Co.; St. Louis, Mo.; May 12, '42; for compositions employed in the treatment of rubber for plasticizing and softening the rubber; since Mar. 18, '42.

452,975. John Wyeth & Brothers, Inc.; Philadelphia, Pa.; May 12, '42; for medicinal vitamin preparations; Apr. 24, '42.

453,004. The Cramer Chemical Co.; Gardner, Kans.; May 14, '42; for chemical and pharmaceutical preparations; since Mar. 29, '21.

453,022. West Virginia Pulp & Paper Company; New York, N. Y.; May 14, '42; for crude tall oil (talloel) soap derived from the fats and resins of pine wood; since Apr. 28, '42.

† Trademarks reproduced and described include those appearing in the *Official Gazette of the U. S. Patent Office*, July 7 to Aug. 4, 1942.

New Trade Marks of the Month

KIL-MAG
453,055

ErustoSalts
453,062

Erustolin
453,064

ERUSTOSOL
453,063

Ferocator
453,065

KEYSTONE
QUAKER BLUE
453,066

'AVICAP'
453,098

ORSO
453,120

CITRU-PECT
453,129

AMOTEIN
453,130

NAPHURIDE
453,136

DEXTA
453,151

PEANUTOLA
453,260

OCTOFOLLIN
453,343

Cold RAY
453,370

CYCLEWELD
453,383

BUG BALK
453,399

BANNER
453,409

RED TOP
453,410

Velvet
453,411

D.P. SOLUTION
453,496

DITOPAX
453,519

DICUMAROL
453,526

WHIPPET
453,566

ISOCEL
453,569

P-O-D
453,609

ENERTOL
453,677

Hyper-Caps
453,678

PANEX
453,679

DELAPAN
453,718

ESTINYL
453,760

Trade Mark Descriptions (*Cont'd.*)

453,047. American Dietaids Company, Inc.; Yonkers, N. Y.; May 16, '42; for vitamin preparation; since Jan. 25, '42.

453,055. P. J. Goodman, doing business as Ray Engineering Company; Philadelphia, Pa.; May 16, '42; for chemical compound used for extinguishing fires and incendiary bombs; since Apr. 9, '42.

453,062. The Pennsylvania Salt Manufacturing Co.; Philadelphia, Pa.; May 16, '42; for laundry souring compounds; since Oct. 5, '33.

453,063. The Pennsylvania Salt Manufacturing Co.; Philadelphia, Pa.; May 16, '42; for laundry souring compounds; since June 6, '39.

453,064. The Pennsylvania Salt Manufacturing Co.; Philadelphia, Pa.; May 16, '42; for laundry souring compounds; Feb. 22, '35.

453,065. The Pennsylvania Salt Manufacturing Co.; Philadelphia; Pa.; May 16, '42; for laundry souring compounds; since Oct. 5, '33.

453,066. The Pennsylvania Salt Manufacturing Co., Philadelphia, Pa.; May 16, '42; for laundry bluing; since July 16, '40.

453,098. Burroughs Wellcome & Co. (U.S.A.), Inc.; New York, N. Y.; May 19, '42; for polyvitamin products; since May 1, '42.

453,120. The Procter & Gamble Company; Cincinnati, Ohio; May 19, '42; for frothing and collecting reagent comprising alkali metal linoleate and oleate for ore flotation processing; since Apr. 17, '42.

453,129. Frederick Stearns & Co.; Detroit, Mich.; May 19, '42; for pharmaceutical preparation; since May 13, '42.

453,130. Frederick Stearns & Company; Detroit, Mich; May 19, '42; for nutritive substance composed largely of amino acids, a protein substitute; since May 13, '42.

453,136. Winthrop Chemical Company, Inc.; New York, N. Y.; May 19, '42; for chemo-therapeutic drug for the treatment of African sleeping sickness (Trypanosomiasis) and Pemhigus; since Apr. 24, '42.

453,151. The A. S. Boyle Company; Jersey City, N. J.; May 21, '42; for cleaning and polishing agent; since Aug. 1, '35.

453,260. Eugenie Marchado; New York, N. Y.; May 19, '42; for shampoo preparation and cleansing cream; since Oct. 1, '41.

453,343. Schieffelin & Co.; New York, N. Y.; May 28, '42; for pharmaceutical preparation — namely, a synthetic estrogen; since Apr. 21, '42.

453,370. Raymond Laboratories, Inc.; St. Paul, Minn.; May 29, '42; for chemical solution to be used in the permanent waving of hair; since May 19, '42.

453,383. The Goodyear Tire & Rubber Company; Akron, Ohio; May 30, '42; for adhesive cement; since Feb. 18, '42.

453,399. Lee B. Leslie, Grand Prairie, Tex.; June 1, '42; for insect repellent and plant stimulant; since April 1, '40.

453,409. The Commercial Paste Co.; Columbus, Ohio; June 2, 1942; for adhesive paste in powder form; since Nov. 1, '15.

453,410. The Commercial Paste Co.; Columbus, Ohio; June 2, '42; for general adhesive in the form of a paste; since June, '27.

453,411. The Commercial Paste Co.; Columbus, Ohio; June 2, '42; for general adhesive in the form of a paste; since Nov. 1, '15.

453,496. Monsanto Chemical Company; St. Louis, Mo.; June 5, '42; for chemical adjuvants for lacquers, shellacs, nitrocellulose solutions, and other coating compositions, particularly adjuvants for preventing deterioration of such coating compositions on standing; since May 6, '42.

453,519. Schering Corporation; Bloomfield, N. J.; June 6, '42; for preparation for internal use for the purpose of facilitating the taking of x-ray pictures of internal organs; since May 29, '42.

453,526. Wisconsin Alumni Research Foundation, Madison, Wisc.; June 6, '42; for anti-coagulants; since May 15, '42.

453,566. Halco Chemical Corp.; New York and Rye, N. Y.; June 9, '42; for chemical preparation for extinguishing fires; since May 22, '42.

453,569. Porocel Corporation; Philadelphia, Pa.; June 9, '42; for catalyst of bauxite impregnated with anhydrous aluminum chloride; since Apr. 23, '42.

453,609. D. H. Buster Chemical Company; Kansas City, Mo.; June 12, '42; for germicide and disinfectant in liquid form; since Mar. 1, '42.

453,677. McKesson & Robbins, Incorporated; New York; June 15, '42; for vitamin preparation; since June 11, '42.

453,678. McKesson & Robbins, Incorporated; New York; June 15, '42; for vitamin preparation; since June 11, '42.

453,679. McKesson & Robbins, Incorporated; New York; June 15, '42; for vitamin preparation; since June 11, '42.

453,718. Eli Lilly and Company; Indianapolis, Ind.; June 17, '42; for medicinal preparation consisting of a precipitated pollen extract used in the treatment of humans hypersensitive to pollens; since May 11, '42.

453,760. Schering Corporation; Bloomfield, N. J.; June 19, '42; for medicinal estrogenic hormone preparation; since May 29, '42.

Summary of War Regulations

There are no more important subjects to the chemical industry today than priorities, allocations, import and price controls. Chemical Industries, last month, chronologically digested the important regulations up to June 30, 1942. This month new regulations are brought up to July 31, 1942. Next month and each month thereafter additional and revised regulations will be given.

By way of explanation a "P" order identifies a limited blanket rating given to a company, or an industry to facilitate the acquisition of scarce materials needed by such companies for defense or essential civilian production.

Distribution of commodities under industry-wide control generally is governed by "M" (material) orders, regulating distribution and flow of a given material into defense or essential civilian production channels.

Limits on the production of materials are covered by "L" limitation orders.

Aniline

July 13, 1942. Control of the distribution of aniline, important chemical in the manufacture of explosives, dyes, drugs, synthetic rubber and other chemical products, was taken by the Director-General for Operations, WPB.

Consumers seeking delivery of aniline under Order M-184, must file requests on Form PD-583 and producers and distributors must report monthly on Form PD-584. The Army, Navy, Coast Guard, Maritime Commission and War Shipping Administration need not file these forms, but must provide the same information in any form they desire. Requests must be filed by August 10 for September delivery.

The restrictions of the order do not apply to use by the Armed Services of aniline produced by them, or to the use by any person of less than 500 pounds of aniline in a month. Consumers requesting 500 pounds or less in a month must certify to the shipper that the total they receive from all shippers will not be more than 500 pounds. Deliveries of 50 pounds or less are not subject to certification. While no shortage of aniline exists at present, increasing demand and possible interruption of imports make the control advisable.

Antimony

July 11, 1942. Amendment to General Preference Order M-112 relaxes restrictions on antimony to encourage substitution of antimony for tin.

Chromium

July 2, 1942. Amendment No. 3 to General Preference Order M-18-a, the chromium allocation order, has been extended indefinitely. It was due to expire on June 30 and the extension is made retroactive to that date.

Cosmetics and Toilet Articles

July 17, 1942. Order L-171 issued to limit and conserve chemicals and other critical materials used in cosmetic and toilet articles.

Schedule No. 1 of the order classifies all toiletry and cosmetic products into three lists and specifies the production or sales permitted for each classification.

Cotton Linters

July 22, 1942. Amendment to General Preference Order M-12 forbids delivery of cotton linters and hull fiber, essential raw materials used in making cotton pulp for explosives and plastics.

Cresylic Acid

July 8, 1942. Price Administrator Leon Henderson informed importers of English cresylic acid that a price regulation governing the price at which they may resell this product would be announced in near future.

Fats and Oils

July 28, 1942. Order M-71, which directs the processing and distribution of fats and oils, due to expire on July 31 was extended until revoked by the Director General for Operations.

Fluorspar

July 15, 1942. Maximum Price Regulation No. 126 sets top prices for fluorspar crude ore.

Lead

July 13, 1942. Sellers of lead scrap materials have been granted permission to charge buyers for the copper contained in terminals of submarine batteries, Price Administrator Leon Henderson announces.

Permission is granted in Amendment No. 3 to Revised Price Schedule No. 70, on lead scrap materials; secondary lead, including calking lead; battery lead scrap; and primary and secondary antimonial lead. The amendment becomes effective July 13, 1942.

The amendment provides that a charge may be imposed for the copper content of terminals in addition to the maximum prices allowed by Revised Price Schedule No. 70 for the lead and antimony content of the scrap. The maximum price permitted for the copper is that provided by Revised Price Schedule No. 20 as Amended, on copper scrap and copper alloy scrap.

Amendment No. 3 also provides that maximum prices for the copper content of lead-covered copper cable shall be determined in accordance with Revised Price Schedule No. 20 as Amended. The Price Administrator said that this effects no change in the substance of Revised Price Schedule No. 70, but merely makes it clear that Revised Price Schedule No. 20 governs the maximum price which may be charged for the copper content of lead-covered copper cable.

Lithium

July 17, 1942. A complete allocation system for lithium compounds will be instituted, starting September 1, according to the Director-General for Operations of WPB. Order M-191 provides for monthly requests for lithium compounds on Form PD-585 and reports from producers on PD-586. Deliveries of 25 pounds or less in any month are exempted from the restrictions of the order. Lithium compounds are widely used in war equipment manufacture, particularly in the making of shockproof and temperature-resistant glass.

Methyl Alcohol

July 28, 1942. Order M-31, which governs the deliveries of methyl alcohol, due to expire on July 31, were extended until revoked by the Director-General for Operations.

Phenols

July 28, 1942. Order M-27, which directs the distribution of phenols, due to expire on July 31 has been extended until revoked by the Director-General for Operations.

War Regulations

Priorities, Allocations, Import and Price Controls—p. 32

Pine Oil

July 15, 1942. Prices for natural and synthetic pine oil—a chemical vital to the prosecution of the war—have been rolled back to the levels prevailing in October 1941 by OPA.

The specific dollars and cents maximum prices established by the regulation—Maximum Price Regulation No. 179, Pine Oil—apply to three classifications of pine oil as therein specified: "Basic pine oil, natural alpha terpineol and light gravity pine oil." The ceiling prices established for these grades is the price at which 80 per cent of them sold during October 1 to 15, 1941. Although specific maximum prices are established for the various grades, it is also provided that no one may sell pine oil for more than this maximum price established by Section 1499.2 of the General Maximum Price Regulation. The regulation becomes effective July 18, 1942.

B3 Reagent grade of pine oil manufactured by the Hercules Powder Company, and synthetic Beta Pine Oil manufactured by Newport Industries, Inc., are specifically exempted from the schedule and continue under the provision of the General Maximum Price Regulation.

The ceiling prices are established f. o. b. plant and no jobber's differentials may be added to the maximum prices. Jobbers typically obtain discounts from manufacturers.

Soap and Glycerine

July 17, 1942. In the first OPA regulation dealing exclusively with size and quality of a commodity, (Commodity Practices Regulation No. 1) the Price Administrator set the types of soap now being sold in different parts of the country as minimum standards for the manufacturers. All forms of household soaps are covered—toilet, laundry, flake, chip and granule—and no reduction in the size of cake or package, or deterioration in the quality, or "serviceability," can be made.

Tin

July 9, 1942. The Director of Industry Operations authorized the use of tinplate or terneplate cans on hand or in process on July 1 for certain products now omitted from the permitted categories of Order M-81.

A revision of that order, issued on June 27, prohibited the manufacture or use of tinplate or terneplate cans for certain chemicals, paints, and other "special products," except for those cans which had been manufactured by February 11, the date of issuance of the original M-81 regulations.

Today's action (Amendment No. 1) changes the above date to July 1, thus permitting the use of cans already made up and of parts already prepared for assembly.

The amendment makes it clear that the use, sale, or delivery of cans which were manufactured in violation of any applicable order of the War Production Board is not permitted by the release of the can inventories involved.

Xylol

July 11, 1942. Amendment No. 1 to General Preference Order M-150 restricts sale and delivery of xylol and xylol aromatic materials to orders bearing preference ratings of A-2 or higher.

Raymond Multi-Wall Paper Bags are the Answer to Packing and Shipping Problems of Powdered Chemicals

You can secure a Raymond Bag in any size, strength, construction . . . printed or plain—a made-to-order bag to meet any merchandising requirement. SEND US YOUR SPECIFICATIONS OR PACKING PROBLEMS.

PASTED BAGS — valve and open mouth
SEWED BAGS — valve and open mouth

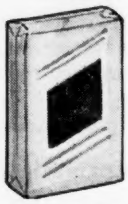
Tough, strong, specially prepared paper supplies reserve strength . . . careful inspection and uniform construction assure perfect bags . . . more than fifty years' experience and every manufacturing facility assures the highest quality workmanship and service — a guarantee of entire satisfaction.

THE RAYMOND BAG COMPANY --- Middletown, Ohio


Open Mouth Pasted Bag

RAYMOND
Multi-Wall
PAPER BAGS

2-3-4-5-6-7-8 or more wall construction


Valve Pasted Bag

DUST-PROOF! SIFT-PROOF! ODOR-PROOF! WATER-RESISTANT!

A Complete Check-List of Products, Chemicals, Process Industries

Textiles*

Treatment of textiles and composition useful therefor. No. 2,277,788. Joseph H. Shipp and Joseph E. Smith to E. I. du Pont de Nemours & Co.

Process for production of artificial textile materials of improved resilience. No. 2,277,747. Henry Dreyfus to Celanese Corp. of America.

Dressing composition to be applied to filaments, yarns and threads of cellulose acetate which comprises about 100 parts by weight of palm kernel oil, about 7.8 parts of diethylcyclohexylamine "loral" sulfate, about 0.8 part of diethylcyclohexylamine, about 0.17 part of "dilorol" phosphate, about 0.8 parts of Eugenol, about 3.3 parts of lecithin, and about 52 parts of refined mineral oil. No. 2,278,747. Fenton Sweezey, Morris Bishop and Robert Hoffman to E. I. du Pont de Nemours & Co.

Yarn sizing process. No. 2,278,902. Edgar Spanagel to E. I. du Pont de Nemours & Co.

Process conditioning yarn composed of or containing cellulose acetate to render it more amenable to textile operations including knitting, weaving, spinning and the like, which comprises applying thereto a lubricating and softening composition containing butyl oleyl ketone. No. 2,279,377. James McNally and Joseph Dickey to Eastman Kodak Co.

Process for treatment of artificial filaments, foils and similar materials having a basis of an organic derivative of cellulose, which comprises drawing them from a package positioned in an atmosphere of wet steam and stretching them while they pass through an atmosphere containing dry steam. No. 2,279,478. Robert Moncrieff and Charles Sammons to Celanese Corp. of America.

Apparatus for stretching artificial filaments, foils and similar materials. No. 2,279,479. Robert Moncrieff and Charles Sammons to Celanese Corp. of America.

Method eliminating tendency of yarns, filaments or fibers to accumulate charge of static electricity. Nos. 2,279,501,-502. Joseph Dickey and James McNally to Eastman Kodak Co.

Synthetic material. No. 2,280,098. William Moss to Celanese Corp. of America.

Rotproofing of textiles, paper and other fibrous materials. No. 2,280,-477. William Carter to National Processes, Ltd.

Cellulose

Process of removing materials causing discoloration of regenerated cellulose sheet from softener baths for regenerated cellulose webs which comprises filtering the contaminated softener bath through diatomaceous earth. No. 2,280,812. Earl T. Ellis to E. I. du Pont de Nemours & Co.

Process which comprises coating regenerated cellulose sheet with a methylol urea ether, polymerizing the coated material and thereafter moisture-proofing coating composition to the polymerized ether material. No. 2,280,829. Walter J. Jebens to E. I. du Pont de Nemours & Co.

Cellulose acetate molding composition prepared by colloiding cellulose acetate normally having a tendency to discolor on heating at molding temperatures with plasticizer therefor and adding an acid to composition in a quantity in range between about 0.002% and 0.01% by weight of the cellulose acetate. No. 2,280,863. Raphael L. Stern to Hercules Powder Co.

An ethyl cellulose composition capable of depositing flexible films which when baked are resistant to softening and weakening effects of solvents, which consists essentially of a solution in mutual solvent of from 65 to 90 parts of medium ethoxy ethyl cellulose having an ethoxy content of from 43.5 to 46.5% and correspondingly from 35 to 10 parts of an organo-soluble and heat-convertible toluene sulfonamideformaldehyde resin. No. 2,281,445. Toivo A. Kauppi to The Dow Chemical Co.

Process for extraction of cellulose fibers from lignified fibrous material. No. 2,281,504. Walter T. Kerr to Sisal Pulp Syndicate Ltd.

Dry cast film of ethyl cellulose containing 0.5% to 5% of an ammonium soap. No. 2,281,523. Daniel D. Lanning to E. I. du Pont de Nemours & Co.

Process of rendering cellulosic fabrics water-repellent. No. 2,282,701. Louis Bock and Herman Bruson to Rohm & Haas Co.

Ceramics, Refractories

Yellow tinted glass containing silica, alkali oxide, zinc oxide and from about .005% to about .1% nickel oxide. No. 2,282,601. Henry Blau and Weston Gillett to Corning Glass Wks.

Chemical Specialty

Insect repellent having as an essential active constituent a straight chain aliphatic nitrile having ten to 14 carbon atoms. No. 2,280,-850. Anderson W. Ralston and John P. Barrett to Armour & Co.

Planographic printing plate presenting printing portions and non-printing portions, said non-printing portions including a water-absorptive material, a filler, and a water-repellent substance. No. 2,280,986. William C. Toland and Ellis Bassist to William C. Toland.

Pencil composition adapted to form difficultly removable stain on surface of objects made of cellulose derivatives and organic plastics which comprises: a base containing 50% to 90% by weight of waxes up to about 30% by weight of plasticizing agents, a binder, a solvent capable of reacting with surface of an object made of cellulose derivatives and organic plastics and an oil-soluble dye. No. 2,280,988. Mary L. Weiser to Walt Disney Productions.

Insecticidal composition comprising a lower 1, 1-dichloro-1-nitroalkane. No. 2,281,239. Henry B. Hass to Purdue Research Foundation.

Germicidal concentrate comprising 24 parts by weight of ortho-phenyl phenyl dissolved in from 36 to 136 parts by weight of a liquid partially neutralized sulfonated oil selected from the group consisting of castor and sperm oils, and which in 5% aqueous solution has a pH above 7.0. No. 2,281,249. Luther S. Roehm to The Dow Chemical Co.

Process obtaining boiler compounds from juice of plants of agave species which comprises preparing a juicy pulp from said plants, pressing the juice therefrom, then subjecting juice to fermentation by organisms normally present on the plant, then adding a compound selected from group consisting of sodium hydroxide and calcium hydroxide to neutralize product, thereby forming salts filtering the product and concentrating the filtrate to at least 20° Baumé. No. 2,281,392. Edward L. Smead and Samuel S. Sadtler to Henex, S. A.

Reissue. **Process for increasing melting point of chocolate** comprising hydrogenating chocolate at a temperature of from about 100°C. to about 150°C. No. 22,089. Frederick H. Penn.

Method de-gumming internal combustion engines comprises introducing mixture of gas and liquid gum solvent atomized therein through the spark-plug opening of a cylinder, such gas being under pressure sufficient to ensure penetration of the solvent throughout the gum deposits, and mechanically reciprocating the piston in the cylinder being treated to compress the gas therein, while preventing the return flow of said mixture through said spark-plug opening. No. 2,281,695. Thomas W. James and Ralph T. Marette to the Lubri-Zol Corp.

Insecticidal dusting composition. No. 2,281,735. Ferd W. Wieder to Stauffer Chemical Co.

Insecticide composition containing as an essential ingredient, an antimonyl derivative of a saturated monobasic aliphatic acid containing an alpha hydroxy group. No. 2,281,784. Albert C. Mohr to Stauffer Chemical Co.

Insecticidal composition containing as an essential ingredient an antimonyl derivative of a saturated alpha monohydroxy dibasic acid. No. 2,281,785. Albert C. Mohr to Stauffer Chemical Co.

Insecticidal composition containing as an essential active ingredient an antimonyl derivative of a saturated alpha hydroxy containing aliphatic acid having at least 3 carboxyl groups. No. 2,281,786. Albert C. Mohr to Stauffer Chemical Co.

Insecticidal composition containing as an essential ingredient, an antimonyl derivative of a saturated dibasic aliphatic acid containing an alpha hydroxy group and at least 2 other hydroxy groups. No. 2,281,787. Albert C. Mohr to Stauffer Chemical Co.

Self-hardening cement for spark plugs. No. 2,281,834. Karl Dietz and Franz Privinsky to Pen-Chlor, Inc.

Insecticidal composition including dioctyl cyanamide. No. 2,281,856. William Moore to American Cyanamid Co.

Insecticidal composition including ethyl dinitro salicylate. No. 2,281,-857. William Moore to American Cyanamid Co.

Wax modifying agent. No. 2,281,941. Eugene Lieber to Standard Oil Development Co.

Soluble coffee extract, process for production. No. 2,282,138. John L. Kellogg to Helen L. Kellogg.

Coffee extract, process for production. No. 2,282,139. John L. Kellogg to Helen L. Kellogg.

Adhesive composition comprising starch and dicyandiamide. No. 2,282,364. Walter Kunze and Raymond Evans to Le Page's Inc.

Solid meltable wax coating composition useful in making waxed paper and having a melting point substantially between 120°F. and 180°F. No. 2,282,375. Frederick Padgett to Moore & Munger.

Method of producing glyceride oil. No. 2,282,779. Sidney Musher to Musher Foundation Inc.

Stabilized olive oil blends with unusual taste and fragrance. No. 2,282,780. Sidney Musher to Musher Foundation, Inc.

Imitation olive oil. No. 2,282,781. Sidney Musher to Musher Foundation Inc.

Enhanced olive flavored oil. No. 2,282,782. Sidney Musher to Musher Foundation Inc.

Method of preparing novel steam exploded materials which comprises subjecting a vegetative material selected from the group consisting of the cereals, cereal germs, legumes, nuts and oil containing seeds to an elevated temperature and pressure while in acidified condition of between pH 3 and pH 6, and instantaneously releasing such pressure, whereby steam explosion of the material is obtained. No. 2,282,783. Sidney Musher to Musher Foundation Inc.

Exploded antioxygenic food composition. No. 2,282,784. Sidney Musher to Musher Foundation Inc.

Stabilized emulsion of vitamin containing vegetative materials in molasses. No. 2,282,785. Sidney Musher to Musher Foundation Inc.

Method of stabilizing the vitamin A and fatty and protein content of a meal selected from the group consisting of meat meal and fish meal against oxidative deterioration, which comprises dispersing the meal in finely divided form through a large body of molasses. No. 2,282,786. Sidney Musher to Musher Foundation Inc.

Substantially stabilized food product comprising a dispersion of a minor amount of a vitamin containing glyceride oil in a major amount of dilute sulfurous acid extract of corn, said extract containing in excess of 40% total corn extract solids. No. 2,282,787. Sidney Musher to Musher Foundation Inc.

Dry stable food composition. No. 2,282,788. Sidney Musher to Musher Foundation Inc.

Stabilized food product. No. 2,282,789. Sidney Musher to Musher Foundation Inc.

Stabilization of glyceride oils. No. 2,282,790. Sidney Musher to Musher Foundation Inc.

Stabilization of fish and similar oils. No. 2,282,791. Sidney Musher to Musher Foundation Inc.

Stabilization of glyceride oils. No. 2,282,792. Sidney Musher to Musher Foundation Inc.

Method of treating food compositions to stabilize them against oxidative deterioration which comprises adding thereto a relatively small proportion of a material selected from the group consisting of inactivated yeast and its water and alcohol soluble extracts. No. 2,282,793. Sidney Musher to Musher Foundation Inc.

Stabilization of dairy compositions. No. 2,282,794. Sidney Musher to Musher Foundation Inc.

Vitamin Product. No. 2,282,795. Sidney Musher to Musher Foundation Inc.

* *Continued from last month (Vol. 536, No. 5—Vol. 537, Nos. 1, 2, 3.)*

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Vitamin Product. No. 2,282,796. Sidney Musher to Musher Foundation Inc.
Manufacture of cereal germ oil. No. 2,282,797. Sidney Musher to Musher Foundation Inc.
Stabilization of foods and oils. No. 2,282,798. Sidney Musher to Musher Foundation Inc.
Stabilization of dairy products. No. 2,282,799. Sidney Musher to Musher Foundation Inc.
Process of stabilizing a glyceride oil containing composition which comprises adding thereto a relatively small proportion of caramelized milk-solids-not-fat. No. 2,282,800. Sidney Musher to Musher Foundation Inc.
Process of stabilizing materials selected from the group consisting of fruits and vegetables against oxidative deterioration, which comprises treating them with a relatively small amount of caramelized milk-solids-not-fat. No. 2,282,801. Sidney Musher to Musher Foundation Inc.
Process of producing a stabilized roasted coffee product which comprises applying to the roasted coffee immediately following roasting and while the coffee beans are at a temperature in excess of 250°F. a small amount of caramelized milk-solids-not-fat in aqueous dispersion, whereby the coffee is substantially stabilized against staleness. No. 2,282,802. Sidney Musher to Musher Foundation Inc.
Stabilized heat reacted cereal flakes. No. 2,282,803. Sidney Musher to Musher Foundation Inc.
Heat treated stabilized flaked cereal germ preparation. No. 2,282,804. Sidney Musher to Musher Foundation Inc.
Stabilized combinations of rice and similar polishings and whey or similar milk-solids-not-fat. No. 2,282,805. Sidney Musher to Musher Foundation Inc.
Process of stabilizing oils subject to oxidative deterioration whereby they become less subject to such deterioration, which comprises adding thereto and dispersing therein a small amount of a finely divided seed and heating to in excess of 250°F. No. 2,282,806. Sidney Musher to Musher Foundation Inc.
Process of rendering fatty animal products which comprises adding a small amount of a finely divided seed to a fat containing animal product, subjecting the combination to an elevated temperature of at least 250°F., followed by removing the fat which will be in substantially stabilized condition. No. 2,282,807. Sidney Musher to Musher Foundation Inc.
Stabilization of essential oils. No. 2,282,808. Sidney Musher to Musher Foundation Inc.
Stabilization of oils. No. 2,282,809. Sidney Musher to Musher Foundation Inc.
Method for stabilizing oils. No. 2,282,810. Sidney Musher to Musher Foundation Inc.
Preservation of oils. No. 2,282,811. Sidney Musher to Musher Foundation Inc.
Stabilization of oils. No. 2,282,812. Sidney Musher to Musher Foundation Inc.
Stabilized oil. No. 2,282,813. Sidney Musher to Musher Foundation Inc.
Stabilization of oils. No. 2,282,814. Sidney Musher to Musher Foundation Inc.
Stabilization of oils. No. 2,282,815. Sidney Musher to Musher Foundation Inc.
Retarding decomposition of oils. No. 2,282,816. Sidney Musher to Musher Foundation Inc.
Treatment of refined wet processed corn germ oil. No. 2,282,817. Sidney Musher to Musher Foundation Inc.
Stabilized food composition. No. 2,282,818. Sidney Musher to Musher Foundation Inc.
Treatment of hydrogenated oils. No. 2,282,819. Sidney Musher to Musher Foundation Inc.
Peanut and soya bean oil. No. 2,282,820. Sidney Musher to Musher Foundation Inc.
An insecticide fungicide germicide preparation containing as an active constituent, an alpha-aroyl beta-amino-ethane compound. No. 2,282,907. William ter Horst to United States Rubber Co.
Insecticidal mercapto-oxazolines. No. 2,282,931. Herman Bruson to Rohm & Haas Co.
Process of mothproofing. No. 2,282,988. Joseph Creely to Eavenson & Levering Co.
Stabilization of starchy paste. No. 2,283,044. George Caesar to Stein, Hall & Co., Inc.

Coal Tar Chemicals

Unsaturated ether nitriles. No. 2,280,790. Herman A. Bruson to The Resinous Products & Chemical Co.
Cyanoalkyl ethers of monohydric alicyclic alcohols. No. 2,280,791. Herman A. Bruson to The Resinous Products & Chemical Co.
Process for manufacture of compounds of the cyclopentano-polyhydrophenanthrene series. No. 2,280,828. Hans H. Inhoffen to Schering Corp.
Aminoarylsulfonamido-pyrazolones. No. 2,280,014. Philip S. Winnek to American Cyanamid Co.
Substituted anthraquinones and corresponding aroyl-benzoic acids and process preparing same. No. 2,281,583. Paul Kranzlein to General Aniline & Film Corp.
Saturated and unsaturated derivatives of 3-keto-cyclopentano-polyhydrophenanthrene series. No. 2,281,622. Leopold Ruzicka to Ciba Pharmaceutical Products, Inc.
4-acetylamino-4 -maltosoamino-diphenyl-sulfone. No. 2,282,211. Paul Pohls and Robert Behnisch to Winthrop Chemical Co., Inc.
Sulfonic Acid Amide compounds and manufacture thereof. No. 2,282,-769. Paul Pohls to Winthrop Chemical Company, Inc.

Coatings

Improved flexible coating composition for waterproofing a surface of a fibrous sheet material. No. 2,280,860. William H. Smyers to Standard Oil Development Co.
Moistureproof wrapping material. No. 2,281,589. James A. Mitchell to E. I. du Pont de Nemours & Co.
Coating composition consisting substantially of 100 parts of polymerized isobutylene, 1 part of stearic acid, 10 parts of ethyl cellulose, 20 parts of paraffin wax, and a pigment. No. 2,281,940. Robert R. Lewis to Vulcan Proofing Co.
Coating for foundry molds and cores comprising 100 parts of finely-divided zircon and 1 to 50 parts of finely-divided carbon. No. 2,282,349. Wilbur Wellings and Donald Hake to The Titanium Alloy Manufacturing Co.

Dyes, Stains

Sulfur dyestuffs. No. 2,281,968. Werner Zerweck and Karl Schutz to General Aniline & Film Corp.
Trinuclear polymethine dyes. No. 2,282,115. Leslie G. S. Brooker and Frank L. White to Eastman Kodak Co.
Vat dyestuffs of dibenzanthrone and isobenzanthrone series. No. 2,282,250. Otto Schlichting and Adolf Hrubesch to General Aniline & Film Corp.
Azo compounds and material colored therewith. No. 2,282,323. Joseph Dickey and James McNally to Eastman Kodak Co.
Trisazo dyestuffs, their copper compounds and their manufacture. No. 2,282,331. Adolf Krebser and Werner Bossard to J. R. Geigy A. G.
New insoluble monazo compounds. No. 2,282,379. Maurice Rogers and Wilfred Sexton to Imperial Chemical Industries Ltd.

Equipment, Apparatus

Apparatus for sterilization of liquids without use of heat or chemicals. No. 2,280,841. Hubert S. Ogden to Robert M. Vaillancourt.
Manufacture of water gas and apparatus therefor. No. 2,281,210. Joseph H. Smith to Humphreys and Glasgow, Ltd.
Apparatus for aeration of fermenting wort in the manufacture of yeast. No. 2,281,457. Sven Olof Rosenqvist to Svenska Jastfabriks Aktiebolaget.
Fluid heat exchange apparatus. No. 2,281,580. James C. Hobbs.
Apparatus for detecting combustible gases. No. 2,281,746. John N. Burdick to The Linde Air Products Co.
Floatable diaphragm for use in a storage tank to minimize evaporation losses of volatile liquids contained therein. No. 2,281,748. Samuel C. Carney to Phillips Petroleum Co.
Heat exchanger. No. 2,281,754. Charles B. Dalzell to Cherry-Burrell Corp.
Chamber oven for production of gas and coke. No. 2,281,847. Heinrich Koppers to Koppers Co.
Adiabatic fractionating column. No. 2,281,906. Gale L. Adams to Socony-Vacuum Oil Co.
Electrolytic cell series of the bipolar electrode filter-press type. No. 2,282,058. Ralph M. Hunter, Lawrence B. Otis and Robert D. Blue to The Dow Chemical Co.
Direct reading hydrometer of the immersion type, comprising in combination a handle, an arcuate segment pivoted at its apex to one end of the handle and provided with suitable indicia, a pointer fixed to the handle in co-operative relation with said indicia, and a temperature compensating unit carried by said segment for exposure to the liquid under test, said unit being of the expansible bellows type, substantially as described. No. 2,282,069. Charles E. Linebarger to The Chaslyn Co.
Apparatus for drying paper and paper pulp samples. No. 2,282,070. Everett A. Manhannah to International Paper Co.
Extraction apparatus and method. No. 2,282,265. Lloyd C. Swallen and Harold Reintjes to Corn Products Refining Co.
Apparatus for charging acetylene cylinders. No. 2,282,346. Stephan Stark.
Catalytic reaction apparatus. No. 2,282,453. Donald Campbell to Standard Oil Development Co.
Apparatus for treating liquids. No. 2,282,623. Homer Torrence to Gladys Torrence.
A hopper for a chemical spreader. No. 2,282,625. Charles Volk.
Continuous mixer. No. 2,283,008. William Le Bar and Russell Cushing to The Pennsylvania Salt Manufacturing Co.

Explosives

Method recovering solvent from freshly granulated smokeless powder. No. 2,280,803. Gild E. Desetti, Walter A. Dew and Bill H. Mackey to E. I. du Pont de Nemours & Co.
Method drying smokeless powder. No. 2,281,560. Walter A. Dew and Bill H. Mackey to E. I. du Pont de Nemours & Co.

Fine Chemicals

Derivatives of α-cyano-γ-acetyl-glutaric acid and process for manufacture thereof. No. 2,280,774. Max Hoffer to Hoffmann-LaRoche Inc.
Synthetic naphthoquinone derivatives. No. 2,280,777. Herman J. Almquist and Alvin A. Klose to Merck & Co., Inc.
Ethers of durohydroquinone and process of preparing same. No. 2,280,814. Erhard Fernholz to Merck & Co., Inc.
Alkaloids of species of erythrina and processes for their production. No. 2,280,816. Karl Folkers and Frank Koniuszy to Merck & Co.
Lower alkyl ethers of vitamin B_6 and process of preparing same. No. 2,280,831. John C. Keresztesy and Joseph R. Stevens to Merck & Co., Inc.
A tetrahydrogenated derivative of the Erythrina alkaloid having the empirical formula $C_{16}H_{19}NO_3$, and which exhibits the physiological action of curare. No. 2,280,837. Randolph T. Major and Karl Folkers to Merck & Co., Inc.
Method preparing therapeutically active benzene sulfonamidyl compounds of sulfanilamide. No. 2 280,856. Sanford M. Rosenthal and Hugo Bauer to Government of U. S.
Acyl derivatives of germinal gland hormone preparations of high activity and a method of producing same. No. 2,280,858. Walter Schoeller, Friedrich Hildebrandt and Erwin Schwenk to Schering Corp.
Process for preparing ortho-hydroxy-cinnamic acid which comprises reacting salicylalacetone with a member of group consisting of the alkali metal- and alkali-earth metal-hypohalites and acidifying the resultant salt of o-hydroxycinnamic acid. No. 2,280,918. Jonas Kamlet to Miles Laboratories, Inc.
(1-nitrocyclohexyl)-1-ethanol. No. 2,281,253. Alfred G. Susie to Purdue Research Foundation.
Extraction of benzo-quinone. No. 2,281,327. Joseph C. Schumacher and Alwin C. Carus to Carus Chemical Co., Inc.

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Stable aqueous solution of chemically-combined iodine and free iodine, including in combination: an aqueous solution of reaction product of iodine and amino-acetic acid; free iodine; and an acidity-reducing agent selected from group consisting of alkaline salts of alkali metals and alkaline-earth metals; the resultant aqueous solution being characterized by substantial freedom from caustic soda in form of sodium hydroxide and from foreign organic matter to thus guard against the undue formation of deleterious iodine compounds such as iodoform created by combination of such foreign organic matter with said free iodine constituent. No. 2,281,612. Paul J. Witte to Tyler Labs., Inc.

Method preparing photographic silver halide emulsion comprising preparing a silver halide in an aqueous solution of a silver halide dispersing agent and subsequently adding thereto a polyvinyl acetaldehyde acetal resin having an uncombined hydroxyl content corresponding to at least 15% polyvinyl alcohol. No. 2,281,703. Wesley G. Lowe to Eastman Kodak Co.

Light sensitive material which consists of a sheet support carrying a colored layer which layer changes their shade on exposure to light wherein the said layer comprises a dyestuff which is unstable light and as a sensitizer a substance selected from the group consisting of anthraquinone and benzanthrone compounds. No. 2,281,895. Gottlieb von Poser and Maximillian P. Schmidt.

Therapeutic composition comprising ortho and para isomers of mono nitro phenol dissolved in combination in a vehicle capable of being applied locally to affected parts of the skin, said vehicle constituting approximately 33 parts and the combined ortho and para nitro phenols constituting approximately 1 part of the composition and the ortho nitro phenol and the para nitro phenol being present in the composition in ratio of approximately 4 parts of the former to 1 part of the latter. No. 2,281,937. Samuel C. Johnson to M. Neal Gordon.

Hormone-like acting product and process of manufacturing same, namely a compound selected from the group consisting of 1-methyl-2- (hydroxyphenyl) -bz-hydroxy-indenes and 1-methyl-2- (hydroxyphenyl) -bz-hydroxy-3, 4-dihydronaphthalenes. No. 2,281,956. Walter Salzer to Winthrop Chemical Co.

Process of obtaining increased yields of plasma from blood which comprises mixing blood with an anticoagulant, permitting blood cells to settle separating the supernatant plasma from the settled blood cells and associated plasma; mixing the blood cells and associated plasma with a substantially neutral sodium chloride solution containing an anticoagulant and not more than 0.2% of gum tragacanth, allowing mixture to stand in cold until blood cells settle to a compact mass and removing the diluted plasma from the settled blood cells. No. 2,281,990. Ivan A. Parfentjev to Lederle Labs., Inc.

Method preparing a non-diffusing coupler capable of reacting with development product of a primary aromatic amino developing agent on development of a silver halide image, which comprises reacting a carboxylic acid chloride of a coupler with gelatin at such temperature and for such time as to form a product of gelatin and acid halide of the coupler capable of gelling. No. 2,282,001. John Russell and Robert E. Stauffer to Eastman Kodak Co.

Photographic silver halide emulsion containing phenazine as an anti-foggant. No. 2,282,005. Samuel E. Sheppard and Waldemar Vanselow to Eastman Kodak Co.

Process producing iodine comprises acidifying to a pH value between about 4 and 6 a saline solution containing iodine in combined form, oxidizing to liberate the iodine by adding a hypochlorite solution having a pH value between about 5 and 11, and thereafter separating the liberated iodine from the so treated solution. No. 2,282,289. Harold A. Robinson to The Dow Chemical Co.

An anthelmintic in the form of a tablet and consisting of substantially 80% of phenothiazine, and intimately mixed therewith starch, carbon dioxide releasing reagents, and sodium choleate as a wetting agent to insure complete disintegration of the tablet. No. 2,282,290. William E. Swales, Anne de Bellevue to The Honorary Advisory Council for Scientific and Industrial Res.

Process of insolating enzymes. No. 2,282,492. Katsuhei Miyamoto to Frederick Stearns & Co.

Stable dry preparation for diagnostic purposes of a biological antigen extract and a substance capable of forming a blood isotonic solution. No. 2,282,754. Friedrich-Wilhelm Bickert to Winthrop Chemical Co., Inc.

Antihalo coating for photographic material. No. 2,282,890. Wilhelm Schneider and Richard Brodersen, dessau, and Oswald Meissner and Max Coenen to General Aniline & Film Corp.

Process of producing oximes. No. 2,283,150. Paul Schiack to E. I. du Pont de Nemours & Co.

Industrial Chemicals

Method removing from tetrachlorethylene impurities of class consisting of 1, 1, 2-trichlorethane and asymmetrical tetrachlorethane. No. 2,280,794. Oliver W. Cass to E. I. du Pont de Nemours & Co.

Method obtaining a sterol from a sterol-containing oil which comprises deriving a sterol-fatty-acid mixture from the oil, distilling off the fatty acids, and recovering the sterol from the residue. No. 2,280,815. Erhard Fernholz to E. R. Squibb & Sons.

Method reducing interfacial tension between two phases of materials forming a dispersion which comprises associating with said materials an alkanol higher aliphatic acid amide, and a higher aliphatic acid ester of alkanolamine hydrochloride said amide and ester being present in the ratio of from 1 to 90 mol % of the amide to 90 to 10 mol % of the ester. No. 2,280,830. Joseph W. Johnson to United Shoe Machinery Corp.

Method preparing stearic acid from tall oil comprising desulfurizing the tall oil, hydrogenating the tall oil to effect substantially complete saturation of fatty acids contained therein and separating stearic acid from hydrogenated tall oil. No. 2,280,842. Anthony F. Oliver and Robert C. Palmer to Newport Industries, Inc.

Method concentrating plant sterol content of tall oil which comprises dissolving tall oil in liquid hydrocarbon, filtering resulting solution through stationary mass of an adsorbent medium, introducing a liquid hydrocarbon into said mass to displace said solution and washing said mass with organic solvent soluble in water to an extent at least to 4% and also miscible with said latter hydrocarbon to recover a solution of a tall oil fraction rich in sterols. No. 2,280,843. Anthony F. Oliver and Robert C. Palmer to Newport Industries, Inc.

Process making an alkali metal phosphate from an alkali metal compound. No. 2,280,848. Gordon R. Pole.

Process for preparation of polyhydric alcohols which comprises electrolytically reducing an aqueous monosaccharide solution containing an alkali metal salt as the catholyte in a diaphragm cell, and maintaining said catholyte free from magnesium in amount greater than about 7.0 parts per million based on total solids during the reduction. No. 2,280,887. Kenneth R. Brown to Atlas Powder Co.

Separation and recovery of short fibrous asbestos from granular asbestos-bearing rock. No. 2,280,903. Wilfred J. Ellison to Turner and Newall Ltd.

Chlorination of methane. No. 2,280,928. Paul F. Pie, Jr. to Darco Corp.

Preparation of chlorine dioxide, ClO_2. No. 2,280,938. George P. Vincent to The Mathieson Alkali Works, Inc.

Process of producing polyhydroxy compounds from anivertible saccharide selected from group consisting of oligosaccharides and polysaccharides. No. 2,280,975. James T. Power to Atlas Powder Co.

Method controlling viscosity of aqueous clay dispersions which comprises admixing therewith a urea compound and a drilling fluid comprising an aqueous thixotropic clay dispersion and a urea compound. No. 2,280,994. Robert B. Booth to American Cyanamid & Chem. Co.

Method controlling viscosity of mud dispersions which comprises admixing dicyandiamide therewith. No. 2,280,995. Robert B. Booth to American Cyanamid Co.

Method controlling viscosity of salt cut and lime cut drilling muds which comprises incorporating dicyandiamide therein. No. 2,280,997. Robert B. Booth to American Cyanamid Co.

Recovery of sugar from beet molasses. No. 2,281,025. Roy H. Cottrell and Vernal Jensen.

In production of reflecting sheet glass containing relatively small percentage of a silver salt, the steps comprising melting a glass batch containing a silver salt, forming the molten glass into sheets and subsequently subjecting these sheets to heat in a reducing atmosphere. No. 2,281,076. Arthur D. Nash to Pittsburgh Plate Glass Co.

Process of purifying rosin, which comprises the contacting of a solution of said rosin with acid-treated bentonite and maintaining the solution at a temperature less than about 28°C. for a period of time proportionately less than about one hour as the order of temperatures range upwardly toward 28°C. whereby to produce a substantially discolorized rosin without materially disturbing the optical rotation of rosin. No. 2,281,078. Robert E. Price and Ismond E. Knapp to Crosby Naval Stores, Inc.

Continuous method of producing potassium persulfate electrolytically without use of a porous diaphragm. No. 2,281,090. Modesto Salleras to Buffalo Electro-Chemical Co., Inc.

Production of unsaturated halogen-containing compounds. No. 2,281,096. William Engs, Herbert P. A. Groll and Alasdair W. Fairbairn to Shell Development Co.

Fatty acid salts of amino alcohols. No. 2,281,177. Byron M. Vanderbilt to Commercial Solvents Corp.

Process for de-acidifying water. No. 2,281,194. Eric Leighton Holmes, Lucie E. Holmes and William G. Prescott to The Permutit Co.

Methanol, process for synthesizing. No. 2,281,228. Ralph L. Brown to The Solvay Process Co.

Process of fusing beryllium chloride which comprises heating it in a closed vessel to a temperature of about 300°C. while permitting the generated vapors to escape and thereafter heating to a temperature of about 400°C, while keeping the vessel tightly closed. No. 2,281,235. Hugh S. Cooper to Cooper-Wilford Beryllium Ltd.

Process for separating mixtures of formaldehyde and volatile organic compounds. No. 2,281,243. Arthur C. Lansing to Commercial Solvents Corp.

Method alkylation in which iso-paraffinic hydrocarbons are alkylated with olefinic hydrocarbons in the presence of a condensation catalyst in an alkylation stage and the catalyst recycled for re-use, the improvement which comprises selectively absorbing the olefinic hydrocarbons of the catalyst and olefins in minutes to less than one tenth of the volumetric catalyst olefin hydrocarbon ratio. No. 2,281,248. David H. Putney to Stratford Development Corp.

Process which comprises reacting an alkyl ester of an alpha beta unsaturated lower dicarboxylic acid and a lower olefinic alcohol in presence of metallic magnesium. No. 2,281,394. Ben E. Sorenson to E. I. du Pont de Nemours & Co.

Lubricant comprising mineral lubricating oil and a small quantity of an oil-soluble metal compound of a thiophenol having an ionization constant in the order about 1 x 10^{-7} to about 1 x 10^{-11}, the oil containing also a small proportion of an oil-soluble detergent metal soap of a relatively strong saponifiable carboxylic acid. No. 2,281,401. Chester E. Wilson.

Dead burnt magnesium oxide clinker consisting of agglomerates of long and relatively thin particles. No. 2,281,477. Heinz H. Chesny.

In process preparing laminated materials wherein thin, non-porous sheets are joined by means of a thermoplastic adhesive, the improvement which comprises applying to at least one surface of one of the sheets as the sole adhesive a thermoplastic adhesive composition comprising a cellulose derivative and from 0.6 to 5 parts of a synthetic resin compatible therewith for each part of cellulose derivative, allowing the film to dry, and uniting said surface to a second surface by means of heat and pressure. No. 2,281,483. Donald E. Edgar to E. I. du Pont de Nemours & Co.

In sulfonation process of synthesizing phenol from benzene involving step of fusing sodium benzene sulfonate with caustic soda, the improvement which comprises separating sodium phenolate from sodium sulfite produced by said fusing by treating the fusion mass with a saturated monohydric aliphatic alcohol solvent. No. 2,291,485. Albert T. Fellows to Allied Chemical & Dye Co.

Grinding wheel or other abrasive article comprising boron carbide abrasive particles bonded with a ceramic bond having the following formula 45% to 65% by weight of SiO_2, 15% to 40% of B_2O_3, 3% to 20% of Al_2O_3 and 3% to 10% of an oxide of alkali metal. No. 2,281,526. Lowell H. Milligan and Robert H. Lombard to Norton Company.

Method and apparatus for hydrolyzing fats and oils. No. 2,281,534. Warren Davey and Martin H. Ittner to Colgate-Palmolive-Peet Co.

Production combustible gas from mass of green substantially solid carbonaceous material. No. 2,281,562. Marvin W. Ditto and William P. Torrinton to Emulsions Process Corp.

Normally liquid organic solvent comprising (a) halogenated aromatic monocyclic hydrocarbon and (b) halogenated aromatic ether, said

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compounds having vapor pressure below atmospheric at 170°C. and being sufficiently stable so as not to substantially decompose either when boiled at atmospheric pressure or under the conditions encountered in combustion chamber of an internal combustion engine. No. 2,281,598. Carl F. Prutton to The Lubri-Zol Corp.

Process which comprises polymerizing a material selected from group consisting of butadiene-1, 3 hydrocarbons and mixtures of butadiene-1.3 hydrocarbons with copolymerizable compounds having a single C-C double linkage in aqueous emulsion in presence of mercaptanes having at least 6 carbon atoms in aliphatic linkage. No. 2,281,613. Heinz Wollthan and Wilhelm Becker to Jasco, Inc.

Water-soluble moth-proofing agents comprising acid mineral acid esters of water-insoluble moth-proofing agents containing at least two free phenolic hydroxy groups which are esterified by an acid selected from group consisting of phosphoric and sulfuric acid. No. 2,281,624. Heribert Schussler and Walther Retter to General Aniline & Film Corp.

Thiocyanomethyl derivatives of phenyl ethers. No. 2,281,677. W. E. Craig and William F. Hester to Rohm & Haas Co.

Phenoxybenzene having a thiocyanate group attached directly to an aromatic nucleus. No. 2,281,692. William F. Hester and W. E. Craig to Rohm & Haas Co.

Sodium Formate, process for production. No. 2,281,715. Donald A. Rogers to The Solvay Process Co.

Process treating charge stock of asphaltic crude and residue consists in first heating said charge stock to substantially 270°F., adding substantially from 0.4% to 1.2% of 22° Baumé hydrochloric acid in such a manner as to effect substantially complete absorption of free hydrochloric acid, circulating same and thereafter air blowing the mix at substantially 425°F. No. 2,281,728. Edmund Thelen to O. C. Field Gasoline Corp.

Dry reagent for direct flameless testing of urine for sugar by reaction with sugar comprising mixture of particles of an anhydrous bismuth salt, caustic alkali in sufficient amount on entering solution on contact with test sample to furnish the heat required for the text, and relatively large amount of a water-free magnesium containing silicate having capillary structure and neutral in color said dry reagent when moistened by the test solution initiating an exothermic reaction whereby all the heat necessary for the test is supplied. No. 2,281,758. Alexander Galat to The Denver Chemical Mfg. Co.

Process treating sludge derived from sewage or other impure waters which comprises agitating highly colloidal clay with water to effect an aqueous suspension of said clay, agitating the suspension for a period of time to effect hydration of colloidal particles, mixing an inorganic electrolyte with hydrated colloidal suspension to produce flocculation thereof, introducing the flocculated mixture into the sludge and dispersing the floc there throughout and ultimately dewatering the thus treated sludge. No. 2,281,759. Royal W. Gelder to Paul Bechtner.

Process of producing sulfur trioxide and oxygen. No. 2,281,762 Worthington T. Grace to E. I. du Pont de Nemours & Co.

Photopolymerization of vinyl halides. No. 2,281768. Jacob Heerema and James S. Owens to The Dow Chemical Co.

In process for conversion of a normal butene to isobutene the step including contacting said normal butene with a stabilized pyrophosphate of a metal selected from group consisting of copper, mercury, zinc, iron, aluminum, cobalt and magnesium at a temperature of from about 250°C. to 450°C. for a time period and under a pressure such that isomerization of the normal butene proceeds at a substantially higher rate than butane polymerization. No. 2,281,804. Robert F. Ruthruff.

In process making substantially anhydrous disodium phosphate by procedure involving drum drying of run-of-plant disodium phosphate liquor containing a material of group consisting of monosodium phosphate and trisodium phosphate, the improvement comprising forming and feeding onto the drying surface of the drum a disodium phosphate liquor containing by weight not more than 0.02% monosodium phosphate and not more than 0.05% trisodium phosphate, on a 50° Be'. at 212°F. basis. No. 2,281,807. John V. Shinn and Aubrey W. Michener to General Chemical Co.

Liquid acid aqueous silica sol derived from the hydrolysis of an organic silicon compound and containing a polybasic acid of such character and in such amount as to delay the setting of the sol in the presence of calcium carbonate to between ¼ hour and 2 hours from the time of preparation of the sol. No. 2,281,810. John B. Stone and Abraham J. Teplitz to Dow Chemical Co.

In process for drying disodium phosphate liquor by procedure involving use of a drum drier, the steps comprising forming on the drying surface of the drum a layer of disodium phosphate liquor heating said layer to convert same to an at least partially dried crust, forming on such crust a layer of disodium phosphate liquor, and continuing heating of the disodium phosphate material on the drum drying surface to thereby form substantially dry material readily removable from said surface. No. 2,281,811. William B. Towner to General Chemical Co.

Method preparing organic nitrogen base which is soluble in a water soluble alcohol, which includes reacting an inorganic salt of said base with an alkali-forming metal hydroxide in a medium of a substantially anhydrous water soluble alcohol, and removing the insoluble alkali metal salt thus formed. No. 2,281,879. David W. Jayne, Jr. to American Cyanamid Co.

Refining of fatty oils. No. 2,281,884. Francis B. Lachle to The Sharples Corp.

Liquid for entrainment by gas to be delivered to a torch containing from 15% to 80% methyl borate, with the remainder one or more liquids which are physically and chemically compatible with said borate, said last-named liquid or liquids selected from the group consisting of ethers, ketones and esters and containing substantially less than 50% oxygen. No. 2,281,910. Jerome M. Bialosky and Menahem Merlub-Sobel to William L. Ulmer.

Separation of isobutylene from hydrocarbon mixtures. No. 2,281,911. Lewis A. Bannon and Helmuth G. Schneider to Standard Oil Development Co.

Resinous Plasticizer. No. 2,282,017. George Alexander to General Electric Co.

Manufacture of alkali metal silicate detergents. No 2,282,018. Chester L Baker to Philadelphia Quartz Co.

Process producing granular precipitates from colloidal solutions. No. 2,282,037. Joseph Dahle to Joseph Dahle.

Process protecting a glyceride oil which contains vitamin A against oxidation without actual admixture of a protecting agent therewith. No. 2,282,054. Kenneth C. D. Hickman and James C. Baxter to Distillation Products, Inc.

Chloracrylic esters. No. 2,282,088. Maxwell A. Pollack to Pittsburgh Plate Glass Co.

Calcined gypsum, process for preparing. No. 2,282,091. Oliver F. Redd.

Manufacture of hydrogen peroxide. No. 2,282,184. Peter Harrower, Robert C. Cooper and Oswald H. Walters to Imperial Chemical Industries, Ltd.

Process of pasteurizing liquids in containers. No. 2,282,187. James L. Herold, William J. Nekola and Frederick W. Wehmiller to Barry-Wehmiller Machinery Co.

Process manufacturing multicellular block, slab or the like, having substantially uniform density throughout, comprising adding animal glue, ammonia alum, caustic soda and colophene to a quantity of hot water, adding a quantity of aluminum powder and cold water, vigorously agitating solution until it is entirely beated into a stiff, persistent foam, mixing said foam into a mixture of cement and water and then causing said mixture to set in the form of a block, slab, or the like with said foam creating hollow cells uniformly dispersed throughout the mass of material. No. 2,282,190. Joseph Jahjah to H. A. Bitar and George E. Atiyeh.

Mineral Wool products and method making it. No. 2,282,230. William M. MacAlpine to Johns-Manville Corp.

Process separating ethyl benzene from a mixture comprising essentially ethyl benzene and isomeric xylenes. No. 2,282,231. William J. Mattox to Universal Oil Products Co.

An electrographitic brush comprising a porous body produced by graphitizing a molded carbonaceous block, and an addition to the porous body to provide for a predetermined conductivity hardness and density the addition comprising carbon deposited in the pores of the body by heat treatment thereof in a hydrocarbon gas atmosphere. No. 2,282,235. Lawrence E. Moberly to Westinghouse Elec. & Mfg. Co.

Caustic alkali solutions, process improving color. No. 2,282,294. John S. Coey to Hooker Electrochemical Co.

Process for regenerating spent metal catalysts in which the metal is present in the sulfide form, which comprises subjecting the spent catalyst to oxidation by means of an oxygen-containing gas to convert the metal sulfide to sulfate, then treating the catalyst with aqueous alkali solution to precipitate metal hydroxide from the sulfate, and subsequently reducing with hydrogen to form free metal. No. 22,097. Bryan Wells to Universal Oil Prods. Co.

Preparation of higher molecular weight aliphatic carboxylic acylhalides. No. 2,282,320. Frank Cahn to The Emulsol Corp.

Pyrolysis of diphenyl-ethane compounds. No. 2,282,327. Robert Dreisbach to The Dow Chemical Co.

Electrolyte for use in the anodic polishing of metals, comprising an aqueous solution of sulfuric acid and ortho-arsenic acid, the combined acid concentration being at least 50% by weight and the balance being largely water. No. 2,282,350. Charles Faust to Battelle Memorial Institute.

Electrolyte for and method of polishing metal surfaces anodically. No. 2,282,351. Charles Faust to Battelle Memorial Institute.

Process applying a composition containing a polyvinyl phthalate of the monomethyl ether of ethylene glycol as a plasticizer to a rubberized fabric base, and subsequently applying a nitrocellulose lacquer thereto. No. 2,282,371. John McGill and Harold Tattersall to Imperial Chemical Industries, Ltd.

Manufacture of laminated glass. No. 2,282,399. Patrick Finnegan to American Window Glass Co.

Production of high molecular weight resinous substances. No. 2,282.-456. Friedrich Christmann and Heinz Lemme and Hans Bueren to William E. Currie.

Method of producing absolutely anhydrous alcohol which comprises adding metallic aluminum to a mixture of alcohol and water containing an amount of water up to its azeotropic mixture, adding an activator comprising at least one of the group consisting of mercuric salt, iodin and stannic chloride, warming the mixture to initiate the reaction and after the reaction has subsided fractionating off the absolutely anhydrous alcohol. No. 2,282,457. Charles Cohen to Standard Oil Development Co.

Direct conversion of alcohols into mixed ethers, comprising passing a mixture of at least 50% of a primary alcohol and a tertiary alcohol at a temperature of 150° to 350°F. over an inert carrier supporting a hydrating acid catalyst and separating the ethers thereby formed. No. 2,282,469. Per Frolich to Standard Oil Co.

Depolymerization of high boiling unsaturated hydrocarbons. No. 2,282,499. Karl Smeykal and Kurt Reisinger to William E. Currie.

Vitrifiable composition for decorating glassware. No. 2,282,540. Alden Deyrup to E. I. du Pont de Nemours & Co.

Process which comprises heating to reacting temperatures a mixture of an esterified phenol having at least one acyloxy methyl group attached to the aromatic nucleus and an ester of a poly unsaturated higher aliphatic carboxylic acid. Also a composition of matter resulting from the condensation of an esterified phenol having at least one acyloxymethyl group attached to the aromatic nucleus and an ester of a poly unsaturated higher aliphatic carboxylic acid. No. 2,282,557. Herman Bruson to The Resinous Prods. & Chemical Co.

Process for hydrogenolysis of crude sugar bearing materials. No. 2,282,603. Robert Du Puis to Association of American Soap & Glycerine Producers, Inc.

Subresinous acylation reaction compound. No. 2,282,644. Melvin De Groote and Bernhard Keiser to Petrolite Corp., Ltd.

Subresinous acylation reaction compound. No. 2,282,645. Melvin De Groote and Bernhard Keiser to Petrolite Corp., Ltd.

Ricinoleic acid ester. No. 2,282,646. Melvin De Groote and Bernhard Keiser to Petrolite Corp., Ltd.

Flame hardening process and apparatus. No. 2,282,670. Robert Mitchell to Harnischfeger Corp.

Electrochemical preparation of halogenated organic hydroxy compounds. No. 2,282,683. Miroslav Tamele, Lloyd Ryland and Vanan Irvine to Shell Development Co.

Dimethylene quaternary ammonium salts. No. 2,282,702. Louis Bock to Rohm & Haas Co.

Process of making asphalt, which consists in oxidizing petroleum residum by heating and agitating in exposure to oxygen and thickening the material to desired melting point and penetration, and after such oxidizing incorporating a small amount of a naphthenate of a metal of the group consisting of cobalt, manganese, iron, lead, vanadium and zinc. No. 2,282,703. Robert Burk to The Standard Oil Co.

Process for the manufacture of mono-vinylacetylene by the polymerization of acetylene which comprises polymerizing acetylene in the presence of a cuprous salt catalyst capable of promoting the poly-

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merization of acetylene to non-benzenoid polymers thereof, maintaining a pressure in the reaction zone of from 1.5 to 5 atmospheres, and removing the resulting mono-vinylacetylene together with unreacted acetylene before 20 per cent conversion of acetylene to polymers thereof takes place. No. 2,282,705. Albert Carter and Frederick Downing to E. I. du Pont de Nemours & Co.

Recovery of hydrogen halides. No. 2,282,712. William Engs and Henry de Jong to Shell Development Co.

Soil treating composition which comprises a water-soluble chloracetate in admixture with a solid alkaline diluent capable of neutralizing any free acid that may be present in the chloracetate or that may be formed during weathering.. No. 2,282,732. Owen Beavan Lean and Gilbert Armstrong to Imperial Chemical Industries, Ltd.

Gel composition and method of preparation. No. 2,282,882. Winton Patnode to General Electric Co.

Process of dehydrating castor oil, which comprises mixing castor oil with about 0.05 to 0.1 per cent by weight of concentrated sulfuric acid, and rapidly heating the caidified oil to a temperature above 500°F. No. 2,282,892. Alexander Schwarcman to Spencer Kellogg and Sons, Inc.

Method for suppressing the catalytic effect of metal compounds on olefinic distillates which comprises adding to the distillate a relatively small amount of a hydroxy-naphthaldehyde in which the oxygen atom of the aldehyde group has been replaced by an amino-phenol group. No. 2,282,936. Joseph Chenicek to Universal Oil Products Co.

Resistance material consisting of a composition of metal-oxygen compounds, the metallic elements thereof consisting of manganese in excess of approximately 50 per cent and a remainder including copper, said copper not to exceed approximately 25 per cent of said metallic elements. No. 2,282,944. Ernest Dearborn and Gerald Pearson to Bell Telephone Laboratories, Inc.

Solution of sulfur-containing organic condensation products. No. 2,282,948. Otto Dietzel to Rutgerskerk-Aktiengesellschaft.

In process wherein a solution of zinc formaldehyde sulfoxylate is concentrated, the improvement which comprises inhibiting oxidation and stabilizing the zinc formaldehyde sulfoxylate during concentration by adding thereto formic acid and glycerol. No. 2,282,-965. Loren Hurd to Rohm & Haas Co.

An oily fraction of alfafa boiling at about 98° C. at 19 mm. pressure of mercury and capable when administered to an aminal organism of causing production by said organism of antiscorbutic activity. No. 2,282,969. Charles King to The University of Pittsburgh.

Process for preparation of 1, 4, 5, 8-tetraaminoanthraquinone consisting in causing 1, 4, 5, 8-tetra-chloranthraquinone to react in an inert solvent with paratholuene sulfonamide in the presence of copper powder and copper acetate constituting catalyzing means and then hydrolysing the condensation product thus obtained. No. 2,283,035. Pierre Bludow to Societe "Rhodiaceta."

Process for refining sulfate wood turpentine. No. 2,283,067. William Jennings.

Isomerization of normal butane. No. 2,283,142. Vladimir Ipatieff and Herman Pines to Universail Oil Products Co.

Isomerization of normal butane. No. 2,283,143. Vladimir Ipatieff and Herman Pines to Universal Oil Products Co.

Process of refining a material selected from the group consisting of rosin, modified rosin, and esters of rosin and modified rosins. No. 2,283,156. Robert Martin.

Leather

Process of producing substances having tanning action. No. 2,282,-264. Edmund Stiasny and Herman Schuette to General Aniline & Film Corp.

Method of preparing tanning agents which comprises reacting a member of the group consisting of sulfonated phenols and sulfonated aromatic hydrocarbons with an aqueous solution of formaldehyde having not more than 10% of melamine dissolved therein until a water-soluble product is obtained. No. 2,282,536. Robert Swain and Pierrepont Adams to American Cyanamid Co.

Metals, Alloys

Phosphorus titanium steel. No. 2,280,796. George F. Comstock to The Titanium Alloy Mfg. Co.

Method altering composition of molten metal which comprises igniting in contact with molten metal a reaction mixture in agglomerated form comprising particles of ferrosilicon intimately associated with and bonded together by means of oxidizing material capable of reacting with silicon of ferrosilicon to generate sufficient heat to melt the iron of the ferrosilicon. No. 2,280,872. Marvin J. Udy.

Method incorporating chromium in iron or steel. No. 2,280,873. Marvin J. Udy.

Flotation of magnesite and the like magnesium ores. No. 2,280,905. Arthur W. Fahrenwald to Northwest Magnesite Co.

Alumina recovery process. No. 2,280,998. Ralph W. Brown to Aluminum Co. of America.

Method melting finely divided inductive metals which consists in constricting to a coned point the sectional area of such a metal charge placing it within the magnetic flux circuit of an alternating electromagnet and then raising it to its melting temperature the coned portion of said charge by locally transforming the electric current from a low to a high amperage. No. 2,281,170. Clarence Q. Payne.

Production of rustless iron. No. 2,281,179. William B. Arness to Rustless Iron & Steel Corp.

In metallurgical process involving the ignition by contact with a body of molten metal of an exothermic reaction mixture containing solid particles comprising a reducing agent and oxidizing material containing oxygen available for reaction with the reducing agent and capable upon ignition of the reaction mixture of reacting exothermically with the reducing agent the improvement which comprises employing the reaction mixture in agglomerated form in which the solid particles comprising the reducing agent are intimately associated with and bonded together by means of the oxidizing material. No. 2,281,216. Marvin J. Udy.

Cast low alloy steel which is characterized by low temperature impact resistance. No. 2,281,219. Nicholas A. Ziegler and Homer W. Northrup to Crane Co.

Method producing a chilled casting having a hard chilled outer zone and a gray inner zone. No. 2,281,460. Oliver Smalley to Meehanite Metal Corp.

Method of treating a precious metal alloy subject to oxidation when heated, according to which there is utilized a centrifugal furnace having alundum in interior thereof, which comprises heating such metal alloy in said furnace in the presence of a flux which is inert to alundum and which contains potassium bitartrate. No. 2,281,-528. Herbert R. Berger to J. F. Jelenko & Co., Inc.

Process for heat treating copper alloys. No. 2,281,691. Franz R. Hensel and Earl I. Larsen to Westinghouse Elec. & Mfg. Co.

Process concentrating a metalliferous ore which includes agitating a pulp of ore with a metallo-organic compound in which a metal is united directly with a nuclear carbon atom of an organic radical selected from the group consisting of alkyl, aryl, and aralkyl radicals, and subjecting the pulp to the action of a sulfidizing agent to yield a floating concentrate, said concentrate being separated. No. 2,281,880. Benjamin LeBaron to Braden Copper Co.

Dental alloy consisting of 100 parts of a mechanical mixture of two alloys, one being 80 to 95 parts of a comminuted silver alloy and the other being 20 to 5 parts of performed hardened silver amalgam, said 80 to 95 parts consisting of 39.61% to 68.50% silver, 4.70% to 23.34% copper, 0.80% to 8.00% zinc and the balance tin; said 20 to 5 parts consisting of a comminuted performed hardened silver amalgam, rich in silver and mercury. No. 2,281,-992. Paul Poetschke.

Production of iron from iron oxide. No. 2,282,124. Frank A. Fahrenwald.

Producton of sponge iron. No. 2,282,144. Frank A. Fahrenwald.

Method reducing magnetostriction in silicon-iron alloy. No. 2,282,163. Stephen L. Burgwin to Westinghouse Electric & Mfg. Co.

Powdered exothermic fluxing material for use in metallic arc welding comprising finely divided particles of iron oxide, aluminum in an amount sufficient to completely reduce the iron oxide an alkaline earth metal compound for lowering the melting point of the resultant aluminate slag and an additional deoxidizing agent for the weld metal. No. 2,282,175. Roy W. Emerson to Westinghouse Elec. & Mfg. Co.

Making dolomite briquettes for use in production of magnesium. No. 2,282,241. John S. Peake to The Dow Chemical Co.

Process of producing tungsten containing alloy steel which comprises adding ferrotungsten and a self-reducing mechanical mixture of tungstic oxide and a carbonaceous reducing agent to a molten ferrous alloy and thereafter adding a reducing agent to the alloy to reabsorb certain of the alloying ingredients which were oxidized by the addition of the tungstic oxide mixture. No. 2,282,486. Arthur Linz to Climax Molybdenum Co.

Method of coating a cupreous surface with tin which comprises bathing said surface with an aqueous solution containing dissolved tin in the stannous condition, dissolved thiocarbamide, and a small amount of an alkali metal carbonate, whereby a deposit of metallic tin is formed directly on the cupreous surface. No. 2,282,511. John Bradley to The American Brass Co.

Production of refined magnesium and magnesium alloys. No. 2,283,-099. Georg Schichtel and Fritz Jaburek to The Anglo-California National Bank of San Francisco.

Method of producing steel strip work with a blued finish. No. 2,283,109. Herman von Ende.

Paints, Pigments

Preparation of pigments comprising rutile titanium dioxide. No. 2,280,795. Sandford S. Cole and Walter K. Nelson to National Lead Co.

Pigment and coating compositions containing same. No. 2,282,006. Clifford K. Sloan to E. I. du Pont de Nemours & Co.

Process for production of improved pigments which comprises incorporating into an aqueous pigment paste a petroleum nitrogen base and a water-immiscible volatile solvent boiling between about 60°C. and about 250°C., mixing, and thereafter drying the pigment. No. 2,282,303. John Morrison and Ben Perkins to E. I. du Pont de Nemours & Co.

In process of transferring a pigment from an aqueous system to an oily system the steps which comprise mixing an aqueous pigment paste, an oily vehicle, and a petroleum nitrogen base, said mixing continuing until a major portion of the water separates and can be poured off. No. 2,282,527. John Morrison and Ben Perkins to E. I. du Pont de Nemours & Co.

Paper Pulp

Method removing water polluting substances from pulp mill waste water, which comprises bringing said waste water into intimate contact with a gaseous fluid and thereby volatilizing such substances removing the volatilized substances with said gaseous fluid, and adding to said waste water a member of the group consisting of hydrates and carbonates of alkaline earth metals effective to reduce foaming caused by treatment of said waste water with said gaseous fluid. No. 2,282,112. Hilding O. V. Bergstrom and Karl Gustav Trobeck.

Petroleum

Reissue. **Method of determining petroleum oil content** of earth samples. No. 22,081. John G. Campbell to Ralph H. Fash.

Process of producing high molecular weight heteropolymers of olefins and sulfur dioxide which comprises conducting the reaction in the absence of actinic light in presence of an active-oxygen-containing substance selected from group consisting of nitrates other than silver nitrate, nitrites, perchlorates, chlorates, persulfates and ozonides. No. 2,280,818. Frederick F. Frey, Rubert D. Snow and Walter A. Schulze to Phillips Petroleum Co.

Hydrocarbon oil conversion process which comprises extracting charging oil with selective solvent to remove objectional components of oil, separating the resultant extract and raffinate, treating the extract with an acidic refining agent, combining the thus treated extract with said raffinate and subjecting the resultant mixture to catalytic cracking. No. 2, 281,257. Wayne L. Benedict and Jacob E. Ahlberg to Universal Oil Products Co.

Process for separating normally gaseous and normally liquid hydrocarbons from a mixture thereof. No. 2,281,282. Clarence G. Gerhold to Universal Oil Products.

Conversion process which comprises fractionally distilling hydrocarbon oil of relatively wide boiling range to separate therefrom heavy gasoline fraction and fraction suitable as catalytic cracking stock, catalytically cracking last named fraction and fractionating resultant products to separate gasoline from higher boiling hydrocarbons combining at least a portion of the latter with said heavy gasoline fraction, thermally cracking resultant mixture, and separating gasoline from products of the last-mentioned cracking step. No. 2,281,338. Frank G. Straka to Universal Oil Products Co.

In sweetening of sour hydrocarbon oils by treatment thereof with

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aqueous alkaline solution capable of removing mercaptans from oil, the method preventing emulsification of alkaline solution and oil which comprises effecting said treatment in presence of relatively small amount of an oil-soluble sulfonate having a molecular weight between 250 and 800. No. 2,281,347. Charles M. Blair, Jr. to Petrolite Corp. Ltd.

In sweetening hydrocarbon distillates containing hydrogen sulfide and water by contact with copper-containing sweetening agents which are deleteriously affected by hydrogen sulfide and water, the improvement which comprises treating the distillate prior to its contact with the sweetening agent with a substantially anhydrous mixture of an aliphatic polyhydroxy alcohol and an aliphatic hydroxylamine to remove hydrogen sulfide and water therefrom. No. 2,281,356. Warren W. Johnstone and Wayne L. Benedict to Universal Oil Products Co.

Process for producing anti-knock motor fuel from gasoline distillates of low anti-knock value. No. 2,281,361. Friedrich W. Leffer to Universal Oil Products Co.

Process treating synthetic hydrocarbon oil resulting from interaction of carbon monoxide and hydrogen. No. 2,281,362. Friedrich W. Leffer to Universal Oil Products Co.

Process separating cracked gasoline into light fraction and heavier fraction of approximately gasoline end boiling point. No. 2,281,-369. Jacque C. Morrell to Universal Oil Products Co.

Process treating crude petroleum which comprises fractionating said petroleum to produce overhead gasoline of at least 70 octane number light and heavy intermediate fractions and residuum, cooling, condensing and collecting said overhead gasoline thermally reforming said light intermediate fractions to produce gasoline of at least 70 octane number, catalytically cracking said heavy intermediate fractions to produce gasoline of at least 70 octane number and fractionating resultant vaporous products independently of said crude petroleum and thermally cracking said residuum along with residual liquids produced in the reforming and catalytic cracking operations to produce coke. No. 2,281,388. Jean D. Seguy to Universal Oil Products Co.

Process for preventing water-in-oil type emulsions resulting from acidization of calcareous oil-bearing strata, which consists in introducing into the cognate fluids of a well prior to emergence a water-soluble, surface-active, alkaline earth-resistant polyglycol ether characterized by freedom from any poly asic carboxy acid radical and which is derived by reacting an alkylene oxide with a water-insoluble hydroxylated ester of a higher molecular weight carboxy acid. No. 2,281,419. Melvin De Groote and Bernhard Keiser to Petrolite Corp. Ltd.

Viscous mineral oil fraction of lubricant type having in admixture therewith a minor proportion of a paranitroso dialkyl aniline in an amount sufficient to inhibit the deleterious effects of oxidation. No. 2,281,520. Everett E. Fuller to Socony-Vacuum Oil Co., Inc.

Lubricating oil composition comprising a viscous hydrocarbon oil which normally tends to deteriorate by oxidation under normal conditions of use and in intimate admixture therewith a minor proportion, sufficient to inhibit such deterioration of a reaction product obtainable by reacting substantially equimolecular proportions of a mercaptan, an aromatic amine and formaldehyde. No. 2,281,521. Everett W. Fuller to Socony-Vacuum Oil Co.

Lubricating composition comprising a major proportion of lubricating oil and from an effective amount to about 20% based on amount of lubricating of a halogenated alkylated aromatic ketone. No. 2,281,597. Carl F. Prutton to The Lubri-Zol Development Corp.

Substantially liquid and non-stringy lubricating oil for internal combustion engines operating at high sustained speeds and under extreme service conditions of temperature and pressure. No. 2,281,-623. John E. Schott to Tide Water Associated Oil Co.

Process preparing mineral oil suitable for lubricating machinery under normal operative condition and also under conditions of extremely high temperature and pressure, comprising chlorinating oils at temperature less than 50°F., neutralizing acids in chlorinated oil by mixing the oil with an alkali solution, stabilizing the oil by heating it with alkali until practically all of the gums and resins settle out, and removing said gums and resins from the oil. No. 2,281,-648. Everett R. Wiles to Bareco Oil Co.

In refining petroleum oil containing paraffin waxes, steps which comprise mixing oil with liquified hydrocarbon bases having a vapor pressure greater than atmospheric at ordinary atmospheric temperature, cooling the mixture to a temperature sufficient to congeal the wax content, passing the cooled mixture through a settling tank to thereby separate high melting wax from the oil mixture by settling, passing the oil mixture from the settling tank and then separating the remaining portion of wax content by filtration. No. 2,281,667. Ulric B. Bray to Union Oil Co. of California.

Turbine oil composition comprising a hydrocarbon mineral oil an oxidation inhibitor and an inhibitor effective to retard corrosion to turbine parts by entrained water. No. 2,281,676. Elmer W. Cook to Tide Water Associated Oil Co.

Extreme pressure lubricant comprising essentially mineral lubricating oil and small percentage of chlorinated Edeleanu extract. No. 2,281,705. David R. Merrill to Union Oil Co.

Lubricating oil containing a relatively small proportion of an alkaline earth metal soap of a saponifiable organic acid to overcome the deposit of resinous and varnish-like materials in severe service internal combustion engines, and a relatively small quantity of an oil-soluble alkaline earth metal compound of a thio-phenolic derivative to overcome corrosive conditions developed in the oil the added constituents not materially increasing the viscosity of the original lubricating oil. No. 2,281,824. Ulric B. Bray to Union Oil Co. of Calif.

Process separating a high-molecular mixture the constituents of which are totally miscible at the temperature of the process into portions having different properties. No. 2,281,865. Willem J. D. van Dijck to Shell Development Co.

Cracking of hydrocarbon oils. No. 2,281,881. Percival C. Keith, Jr. and Joseph K. Roberts to Standard Oil Co.

Method of producing oxidation inhibitors. No. 2,281,892. Joshua A. Tilton to Standard Oil Development Co.

Lubricating or electrical oil composition comprising a refined mineral lubricating oil and dissolved therein a small amount of highly cracked distillate oil free from tar selected from the group consisting of coking cycle stock and cracking coke blow down oil and having an initial boiling point above 500°F. and a specific dispersion above 200 said composition having greater resistance to oxidation than said mineral oil. No. 2,281,894. George H. von Fuchs and Hyman Diamond to Shell Development Co.

Process in which petroleum is treated with phenol and with benzol. No. 2,280,897. James M. Whiteley, Jr. to Standard Oil Development Co.

Cracking oil using synthetic catalytic compositions. No. 2,281,919. Gerald C. Connolly to Standard Oil Development Co.

In process for isomerizing butane in vapor phase with the aid of a supported aluminum chloride catalyst the step of continuously passing vapors of normal butane in contact with the catalyst and immediately thereafter under substantially same conditions with an adsorptive alumina, whereby aluminum chloride vapors are substantially adsorbed from the reaction mixture. No. 2,281,924. Martin de Simo' and Frank M. McMillan to Shell Development Co.

Addition agent for lubricating oils. No. 2,281,942. Eugene Lieber to Standard Oil Development Co.

Process for removal of over-polymerized constituents from polymerized oils comprising treating said polymerized oils with a mixture comprising a low boiling petroleum hydrocarbon and a light oil boiling in the lubricating oil range under conditions to precipitate said over-polymerized constituents and to retain said polymerized oil in solution, separating precipitated constituents and recovering the polymerized oils from said solution. No. 2,281,979. Charles N. Kimberlin to Standard Oil Development Co.

Process refining viscous hydrocarbon oil which comprises adding to oil a small quantity of finely-divided mica and talc, contacting mixture with sulfuric acid, and separating from treated oil the mica-talc mixture containing entrained acid sludge. No. 2,282,033. Vladimir L. Checot to The Atlantic Refining Co.

Conversion of hydrocarbons. No. 2,282,273. Kenneth M. Watson to Universal Oil Products Co.

Lubricating composition. No. 2,282,343. Carl Prutton to The Lubri-Zol Development Corp.

Desulfurizing and cracking process. No. 2,282,451. Benjamin Brooks to Standard Alcohol Co.

Catalytic alkylation process. No. 2,282,505. Hans Vesterdal to Standard Oil Development Co.

Stabilization of viscous petroleum oils. No. 2,282,513. Frederick Downing and Charles Pedersen to E. I. du Pont de Nemours & Co.

Production of color stabilized petroleum oils. No. 2,282,514. Herbert Fischer and Willem James three-fourths to Standard Oil Development Co. and one-fourth to Socony-Vacuum Oil Co.

Polymerization of hydrocarbon gases. No. 2,282,549. Frederick Sullivan and Robert Ruthruff to Standard Oil Co.

Method of sweetening petroleum products. No. 2,282,594. Donald Stevens and Joseph Nickels to Gulf Research & Development Co.

Process for the conversion of hydrocarbons. No. 2,282,602. Harry Drennan to Phillips Petroleum Co.

Lubricating oil containing dissolved a small amount of a thioxin selected from the class consisting of dibenzothioxin, alpha-alpha'-dibenzophenothioxin, alpha-benzophenothioxin and the substituted homologues thereof containing attached to aromatic nuclei ortho- and para-directing substitution radicals. No. 2,282,686. Paul Van Ess to Shell Development Co.

Method of lubricating bearing surfaces, at least one of which comprises an alloy having substantially the corrosion susceptibility of cadmium-silver, cadmium-nickel and copper-lead alloys, which comprises applying to the bearing surfaces lubricant having incorporated therein, in corrosion inhibiting proportions, a sufficiently oil-soluble organic metallic sulfide. No. 2,282,707. Elmer Cook to Tide Water Associated Oil Co.

Stabilization of petroleum hydrocarbons. No. 2,282,710. Melvin Dietrich to E. I. du Pont de Nemours & Co.

Catalytic conversion of hydrocarbon oils. No. 2,282,855. Gustav Egloff to Universal Oil Products Co.

Process for conversion of hydrocarbons which comprises cracking hydrocarbons heavier than gasoline in the presence of an alumina-silica catalyst resulting from the co-precipitation of hydrated aluminum and silicon oxides in an aqueous menstruum containing ammonium hydroxide. No. 2,282,922. Jacob Elston Ahlberg and Charles Thomas to Universal Oil Products Co.

Lubricant seal for bearings. No. 2,283,022. August Gunnar Wallgren to Aktiebolaget Bolinder-Munktell.

Resins, Plastics

Method polymerizing organic materials that comprises dispersing them as vatlets in a carrying gas and polymerizing them surrounded by a carrying gas so that the product does not come in contact with walls of the reaction chamber. No. 2,280,802. Harlan A. Depew.

Process preparing modified oils and resinous materials which comprises refluxing fatty unsaturated non hydroxylated oils containing substantially no conjugation and maleic acid esters of unsaturated alcohols. No. 2,280,862. Ben E. Sorenson to E. I. du Pont de Nemours & Co.

Process preparing synthetic resin molding materials containing fillers. No. 2,280,934. Fritz Seebach to Bakelite Corp.

Condensation product of styrene and diphenyl ether in presence of an alkylation catalyst said product distilling at temperatures between about 210°C. and about 248°C. under 20 millimeters pressure and consisting of a mixture of isomeric mono-phenylethyl-diphenyl ethers. No. 2,281,252. Frank B. Smith and Harold W. Moll to The Dow Chemical Co.

Polymeric reaction product of a linear polymide-forming composition comprising a member of the class consisting of polymerizable monoam nomonocarboxylic acids and mixtures of diamine and dibasic carboxylic acid and a linear polyester-forming composition which comprises a diprimary glycol having at least one hydrocarbon substituent attached to the chain of atoms separating the hydroxyl groups; the said polymeric reaction product being one which can be formed into fibres showing by characteristic X-ray patterns orientation along the fiber axis. No. 2,281,415. Donald D. Coffman to E. I. du Pont de Nemours & Co.

Urea-haloacylated urea-aldehyde condensation products. No. 2,281,-559. Gaetano F. D'Alelio to General Electric Co.

Polyamides and process of making same. No. 2,281,576. William E. Hanford to E. I. du Pont de Nemours & Co.

Molding powder in which binder consists of a molding resin selected from class of phenol-aldehyde and urea-aldehyde resins and reaction product of an aldehyde with the insoluble residue remaining after treatment of soy bean meal with an aqueous medium to remove water-soluble constituents present in the meal. No. 2,281,584. Percy L. Julian and Elmer B. Oberg to The Glidden Co.

Method of frosting lucite. No. 2,281,837. David O. Ford to Oliver E. Crocker.

Additional patents on Resins, Plastics, Rubber and Textiles for above volumes will be given next month.

Abstracts of Foreign Patents

Collected from Original Sources and Edited

Those making use of this summary should keep in mind the following facts:

Belgian and Canadian patents are not printed. Photostats of the former and certified typewritten copies of the latter may be obtained from the respective Patent Offices.

English *Complete Specifications Accepted* and French patents are printed, and copies may be obtained from the respective Patent Offices.

In spite of present conditions, copies of all patents reported are obtainable, and will be supplied at reasonable cost.

This digest presents the latest available data, but reflects the usual delays in transportation and printing. Your comments and criticisms will be appreciated.

CANADIAN PATENTS

Granted and Published July 29, 1941.

Method and apparatus for decarbonizing iron. No. 398,213. Bo Michael Sture Kalling and Ivar Rennerfelt.

Process comprising reacting ammonium bifluoride with boric acid, the proportions being such as to provide approximately one atom of boron for each three atoms of fluorine and evaporating the reaction mixture to a solid state. No. 398,244. Carl F. Swinehart.

Method of producing a moldable ligno-cellulosic material from a natural ligno-cellulosic material. No. 398,260. Burgess Cellulose Company. (Arlie W. Schorger and John H. Ferguson).

Method of producing a thermoplastic lignocellulosic material capable of being hot-molded under pressure into a hard, water-resistant and resin-like product. No. 398,261. Burgess Cellulose Company. (Arlie W. Schorger and John H. Ferguson).

Method of making a thermoplastic lignocellulosic material capable of being hot-molded into a hard, resin-like product by admixing with the natural lignocellulosic material approximately 1 to 15% by weight of aniline. No. 398,262. Burgess Cellulose Company. (Arlie W. Schorger).

A fluorescent material consisting essentially of a calcium compound of the group consisting of the tungstate and the molybdate, said composition containing also about 0.5 to 3% of samarium and about 1% of lead calculated as elementary constituents and present in the composition as activators of fluorescence. No. 398,267. Canadian General Electric Company, Limited. (Gordon R. Fonda).

Method of manufacturing granular coated webs which comprises the steps of applying a layer of liquid adhesive to the granular surface of a web previously coated with granular particles and immediately thereafter directing against the said adhesive layer a high velocity jet of gas containing a solvent of said adhesive whereby said adhesive is driven from the peaks of said granular particles and deposited around the bases thereof. No. 398,269. The Carborondum Company. (Romie L. Melton, Raymond C. Benner and Henry P. Kirchner).

A granular coated web having granular particles adhesively attached to a web backing material and further supported by an additional layer of adhesive deposited around the bases of said particles and forming a supporting mound of adhesive located principally on one side of said granular particle. No. 398,270. The Carborondum Company. (Romie L. Melton, Raymond C. Benner and Henry P. Kirchner).

Method of manufacturing granular coated webs which comprises the steps of applying a layer of liquid adhesive of excess thickness to the granular surface of a web previously coated with granular particles and then directing a high velocity stream of gas against said adhesive layer whereby the excess adhesive is removed and the peaks of said granular particles are cleared of the residual coating of adhesive. No. 398,271. The Carborundum Company. (John A. Williamson).

A stable aqueous hypochlorite solution substantially free of basic hydroxide having a concentration of available chlorine greater than that corresponding to an aqueous solution of sodium hypochlorite having a strength of 3% by weight. No. 398,274. Clorox Chemical Co. (Larry J. Barton).

Process for the production of compositions containing components of the vitamin B complex which comprises subjecting a fermentable vegetable carbohydrate containing mash to the action of butyl alcohol producing bacteria, and concentrating the residual solids in the fermented mash. No. 398,275. Commercial Solvents Corporation. (Carl S. Miner).

Method of providing components of the vitamin B complex in a material deficient in said components which comprises incorporating with said material residual solids from a fermentation residue resulting from the action of butyl alcohol producing bacteria on a fermentable vegetable carbohydrate containing mash. No. 398,276. Commercial Solvents Corporation. (Carl S. Miner).

Method of increasing beyond the ordinary period of fluidity the setting time of a mixture for use in the production of precast steam-hardened artificial stone including siliceous material, lime, and water, which consists in adding to the mixture a small percentage of sodium silicate. No. 398,278. The Continental Investment Syndicate Limited. (Norman V. S. Knibbs).

An inner tube having a wall comprising inner and outer laminae of rubber composition, said outer lamina having perforations extending therethrough, said inner lamina being vulcanized to the inner face of the outer lamina and having portions extending into said perforations to define walls opposing the lateral walls of said perforations. No. 398,284. Dominion Rubber Company, Limited. (Alfred N. Iknayan).

An inner tube comprising an endless tubular wall of elastic rubber composition and a pair of circumferentially extending flaps solely of soft elastic rubber composition integrally attached respectively to the opposite sidewalls thereof adjacent the rim engaging region, said flaps extending inwardly from their points of attachment towards the central plane of rotation of the tube and overlying the rim engaging region for forming with the rim engaging region double wall sections throughout those portions of the inner tube normally adjacent the junctions formed between an encasing tire and a supporting rim. No. 398,285. Dominion Rubber Company, Limited. (Ernst Eger).

Low alloyed steel containing carbon in an amount not exceeding 0.6%, manganese in an amount not exceeding 2%, silicon in an amount not exceeding 1%, a substantial amount of at least one carbide forming metal of the group consisting of chromium and molybdenum, the chromium being less than 2% and the molybdenum not exceeding 1%, 0.2% to 0.5% niobium which imparts to said steel a fine-grained structure which persists at all temperatures up to and somewhat above the critical range, increased ductility, increased impact strength at normal and subzero temperatures, improved hot and cold workability, and increased resistance to hot and cold oxidation, but does not impart substantial age hardening properties, and the remainder iron. No. 398,287. Electro Metallurgical Company of Canada, Limited. (Frederick M. Becket and Russell Franks).

An emulsion-forming or emulsifying composition comprising 3-40% of blood serum solids, 87-60% of milk solids and 10-25% of vegetable gum. No. 398,291. The Griffith Laboratories, Limited. (Carroll L. Griffith and Lloyd A. Hall).

Apparatus for molding plastic material. No. 398,292. Hartford-Empire Company. (Gordon B. Sayre).

Process for the extraction of protein from peanuts. No. 398,296. Imperial Chemical Industries, Limited. (Andrew McLean).

A carbon-free rolled nickel anode characterized by good activity and the ability to corrode smoothly without formation of a black surface film or network at any pH up to about 6.5 **(Q)**, said anode containing about 0.04% copper, about 0.14% oxygen, about 0.004% sulfur and the balance nickel. No. 398,304. The International Nickel Company, Inc. (Clarence G. Bieber and Harry E. Tschop).

Process of producing a substantially blister-free, cold worked, and annealed compound metal sheet. No. 398,305. The International Nickel Company, Inc. (Harry R. Copson).

Method of removing zinc from lead and lead alloys which comprises melting the metal to be purified and while agitating it at a temperature above the solidifying point thereof adding ammonium chloride thereto and removing the zinc chloride skim formed thereby. No. 398,315. National Lead Company. (Gustave E. Behr).

A coating composition, capable of forming tough, adherent, impermeable films which are resistant to the attack of corrosive chemicals, which comprises 1.5 parts by weight of diamyl naphthalene, 6 parts by weight of ethyl cellulose, 3 parts by weight of titanium oxide, 22.5 parts by weight of ethyl alcohol, 42.7 parts by weight of toluene, 22.5 parts by weight of xylene and 2.3 parts by weight of methyl cellosolve acetate. No. 398,320. Pittsburgh Plate Glass Co. (Irving E. Muskat).

Process for the production of carbon bisulfide in which the vaporous reactants are reacted at a temperature of from 800-1000°C. in the presence of nickel sulfide to form a gaseous reaction mixture consisting predominantly of CS_2 and H_2 substantially devoid of unreacted sulfur. No. 398,327. Shell Development Company. (Martin de Simo).

Process of recovering chlorine from nitrosyl chloride-containing gases. No. 398,328. The Solvay Process Company. (William C. Klingelhoefer).

Process for the recovery of elemental chlorine from nitrosyl chloride-containing gases by reacting nitrosyl chloride with sulfur monochloride and treating the reaction product thus obtained to recover elemental chlorine. No. 398,329. The Solvay Process Company. (William C. Klingelhoefer).

Process for recovering elemental chlorine from nitrosyl chloride-containing gases. No. 398,330. The Solvay Process Company. (William C. Klingelhoefer).

Method of coating a web of flexible sheet material on both sides in a single operation. No. 398,338. S. D. Warren Company. (Stanley J. Johnson).

Extraction of vegetable material containing substances belonging to the flavone group by means of an organic solvent miscible with the group consisting of alkali metals or alkaline earth metals and decomposing the precipitate thus formed by means of an acid. No. 398,341. Winthrop Chemical Company, Inc. (Albert Szent-Györgyi).

Process for the manufacture of organic acid esters of polysaccharides comprising starch or near degradation products thereof, which comprises treating the polysaccharides with a mixture comprising an organic acid and water, and thereafter bringing the polysaccharide into contact with an esterifying medium and effecting esterification. No. 398,343. Camille Dreyfus. (George W. Miles).

Roll calender device for forming a plastic web. No. 398,344. Camille Dreyfus. (Arthur R. Mosler, Jr.).

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Foreign Chemical Patents

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Method of reducing an oxidized beryllium compound which comprises heating it to a temperature at which metallic beryllium is substantially vaporized, subjecting the compound to a stream of atomic hydrogen, carrying metallic beryllium reduced by said hydrogen in vapor form from the reaction zone in a stream of gases composed predominantly of hydrogen, and condensing metallic beryllium from the hydrogen by an alloying metal. No. 398,346. Paul M. Dolan.

A condensation product consisting of at least two pyrene radicals joined to each other by an alkylene group. No. 398,347. Heinrich Hopff, Helmut Eichel and Hans Schoenherr.

Granted and Published August 5, 1941.

A water paint consisting of an admixture in powder form in proportionate quantities, zinc oxide, lithopone, whiting, silica, pyrophyllic, silver mica, China clay, litharge, casein, potassium carbonate, mercuric chloride and barium carbonate as filler, to which water of proportionate quantities is added to produce a fluid emulsion. No. 398,356. Edward Bean.

A composition of matter to gradually restore the functional coordination of the urinary organs and the bowels produced by the process comprising reducing to a powder prickly-ash berries, juniper berries, burdock root, uva ursi and slippery-elm bark, then thoroughly mixing these powdered ingredients and then adding sufficient water at atmospheric temperature thereto to form a paste. No. 398,359. René M. Caisse-McGaughey.

Process of making sulfur nitride comprising contacting a mixture of a sulfur-chlorine compound and a nonaqueous diluent, such sulfur-chlorine compound containing at least as many chlorine atoms as sulfur atoms, with an excess of a liquid material of the class consisting of liquid NH_3 and solutions of NH_3 in organic solvents, both reactants being substantially dry, NH_3 being maintained in excess in the reaction mixture at all times. No. 398,365. Willis Conrad Fernelius.

Process of making fatty acid condensation product soluble in fat comcomprising reacting a material of the class comprising essentially carboxylic fatty acids of animal and vegetable oils, fats and waxes and mixtures thereof, with phosphorus pentoxide under controlled heating starting at a temperature of boiling water to the point of degradation of the materials, the proportion of P_2O_5 being such that the reaction is a condensation to enlarge the molecular structure without the formation of phosphoric acid esters. No. 398,369. Stroud Jordan.

A liquid composition for the treatment of rheumatism in which the essential ingredients comprise, for each treatment, of one pint of gin testing 40-42, and one-half ounce of Jalop gum powdered, one-half ounce of Gailbok gum powdered, and one-half ounce of chardon root extract. No. 398,377. Joseph Lusignan.

Method of preventing the tarnishing of silver and brass which comprises coating a metal selected from the group consisting of silver and brass with a lacquer containing castor oil-modified phthalic glyceride resin prepared by reacting from about 2 moles of formaldehyde to about 6 moles of formaldehyde with one mole of melamine and with butanol under acid conditions and subjecting the coated metal to a temperature of about 150°C. until a hard, clear coating is obtained. No. 398,395. American Cyanamid Company. (Donald W. Light and Leonard P. Moore).

A substantially continuous process for producing a resin-impregnated felt web. No. 398,399. The Barrett Company. (Leslie T. Sutherland).

The process of making tetrabenzo-triaza-porphin comprising reacting methylene phthalimidine with phthalonitrile in the presence of metalliferous substances. No. 398,408. Canadian Industries, Limited. (Charles Enrique Dent).

An apparatus for forming a strip of sheet material from a hot gel type dope which congeals upon cooling. No. 398,409. Canadian Kodak Company, Limited. (Hans T. Clarke).

An individual multilayer molded fibrous article of dished shape comprising a plurality of superimposed preformed resin-bearing fibrous layers of complemental size and shape, die-molded from different aqueous pulp mixtures containing fibres and uncured synthetic resin. No. 398,418. The Canal National Bank of Portland. (Edward E. Sawyer).

Process of forming sheet stock of a vinyl resin, said stock being homogeneous, of uniform strength and free from bubbles or entrapped gases. No. 398,419. Carbide and Carbon Chemicals, Limited. (Lauchlin M. Currie and Leon K. Merrill).

A cheese making process comprising pasteurizing milk, neutralizing it with an agent selected from the class consisting of calcium oxide and magnesium oxide, adding a lactic acid-producing starter to the milk, and coagulating the milk with a coagulating agent. No. 398,423. De-Raef Corporation. (Ernest D. Fear).

Method of making homogenized milk by pasteurizing the milk, neutralizing it with an agent selected from the class consisting of calcium oxide and magnesium oxide, homogenizing the milk so treated, adding a lactic acid-producing starter, and then cooling the milk. No. 398,424. De-Raef Corporation. (Ernest D. Fear).

Method of making a lactic acid-producing starter including the steps of pasteurizing milk, neutralizing it with an agent selected from the class consisting of calcium oxide and magnesium oxide, and then inoculating the milk with a lactic acid-producing culture. No. 398,425. De-Raef Corporation. (Ernest D. Fear).

An apparatus for manufacturing a starch paste. No. 398,428. The Distillers Company, Limited. (Philip D. Copnock).

Vacuum pumping apparatus comprising in combination a condensation pump and means located at the intake side thereof for heating vapours which, during operation, pass from the pump in a direction opposite to that in which gases being pumped are moving. No. 398,430. Distillation Products, Inc. (Richard S. Morse).

A process for the continuous and simultaneous production of a gas and a substantially dry residue by the reaction of a solid and a fluid. No. 398,431. Dominion Oxygen Company, Limited. (William F. Mesinger).

Method of forming a strong, corrosion resistant joint in zinc-coated iron, without impairing substantially the zinc coating of such material, which comprises bonding at least two adjacent surfaces of such zinc-coated iron with fusion deposited aluminum. No. 398,432. Dominion Oxygen Company, Limited. (Marvin R. Scott).

Apparatus for supplying and controlling the flow of gas to a plurality of points of use. No. 398,433. Dominion Oxygen Company, Limited. (Wilgot J. Jacobsson).

Recovery of iodine from iodine-containing solutions by chemical means. No. 398,434. The Dow Chemical Company. (Sheldon B. Heath).

Recovery of bromine from bromine-containing solutions by chemical means. No. 398,435. The Dow Chemical Company. (Sheldon B. Heath).

Process for producing a halogen having a higher atomic weight than chlorine. No. 398,436. The Dow Chemical Company. (George W. Hooker).

Method for the preparation of cellulose ethers of improved thermostability which comprises subjecting a solution of a cellulose ether in a solvent which is substantially non-reducible under reaction conditions to the action of hydrogen in the presence of a hydrogenation catalyst. No. 398,437. The Dow Chemical Company. (Shailer L. Bass, Floyd C. Peterson and Howard N. Fenn).

Process for bonding compositions comprising rubber or the like to a metal. No. 398,438. Dunlop Tire and Rubber Goods Company, Limited. (Douglas F. Twist and Frederick A. Jones).

Process for bonding compositions comprising rubber or the like to metal. No. 398,438. Dunlop Tire and Rubber Goods Company, Limited. (Douglas F. Twist and Frederick Arthur Jones).

Process which comprises reciprocating and turning mineral matter beneath concentrated sprays of water of high velocity, intercepting the splash from the sprays and the air current set up thereby, removing the minerals from the region of the sprays, and draining liquids therefrom. No. 398,439. E. I. du Pont de Nemours & Co., Inc. (Henry L. Alexander and Willing B. Foulke).

Production of photographic color pictures. No. 398,453. General Aniline & Film Corporation. (Wilhelm Schneider and Hermann Lohaus).

Apparatus for the manufacture of water gas. No. 398,459. Humphreys & Glasgow, Limited. (Joseph H. Smith).

Method for the manufacture of water gas. No. 398,460. Humphreys & Glasgow, Limited. (Hugh T. Cohen).

Method of treating gelatin which comprises adding sodium hexametaphosphate thereto. No. 398,461. Industrial Patents Corporation. (Donald P. Grettie).

Hydraulic inlet for Fourdinier paper making machines. No. 398,474. Paper Patents Company. (William R. Kellett and Huron C. Brien).

Hydraulic inlet for Fourdinier paper making machines. No. 398,475. Paper Patents Company. (William R. Kellett and Huron C. Brien).

Process for the production of 3-amino-4-hydroxy phenylarsine oxide. No. 398,476. Parke, Davis & Company. (Albert B. Scott, Ralph D. Hummel, Benjamin F. Tullar, and Joseph Wainwright).

Process for the preparation of substantially pure 3-amino-4-hydroxy phenylarsine oxide. No. 398,477. Parke, Davis & Company. (Albert B. Scott and James A. Sutzaberger).

Process for the preparation of the sulfate of 3-amino-4-hydroxy phenylarsine oxide by reacting 3-amino-4-hydroxy phenylarsine free base with sulfuric acid. No. 398,478. Parke, Davis & Company. (Benjamin F. Tullar).

Process for separating a high molecular weight, substantially water-immiscible mixture into portion having different properties. No. 398,482. Shell Development Company. (Eric S. Hillman and Vernon Lantz).

Process for the separation of paraffinic and non-paraffinic portions of a petroleum lubricating oil fraction containing the same. No. 398,483. Shell Development Company. (Alvin P. Anderson).

Continuous duosol extraction process for separating hydrocarbon oil into portions of different properties. No. 398,484. Shell Development Company. (Alvin P. Anderson).

Process for fractionating oil. No. 398,485. Shell Development Company. (Vernon Lantz).

Process of curing freshly poured concrete. No. 398,486. Shell Development Company. (John F. McSwain).

Method of manufacturing hydrocarbon products adapted for incorporation in rubber mixtures. No. 398,513. Wilmington Chemical Corporation. (Fritz Rostler and Vilma Mehner).

A heat-hardening plastic composition of the phenol-formaldehyde condensation type including waste from petroleum refining. No. 398,514. Wilmington Chemical Corporation. (Fritz Rostler and Vilma Mehner).

Process for stripping the dyes from cellulose acetate materials by subjecting the materials to the action of a swelling agent comprising methylene chloride. No. 398,518. Henry Dreyfus. (Robert W. Moncrieff).

Method of rubber coating one surface of a fabric as with latex. No. 398,524. International Latex Processes, Limited. (Albert W. Holmberg and Robert R. Sterret).

Method of dehydrating alcohol by azeotropic distillation. No. 398,525. Les Usines de Melle. (Henri M. Guinot).

Apparatus for treating solid goods with volatile solvents. No. 398,529. Dr. Alexander Wacker Gessellschaft für Elektrochemische Industrie m.b.H. (Georg Edhofer and Georg Wolff).

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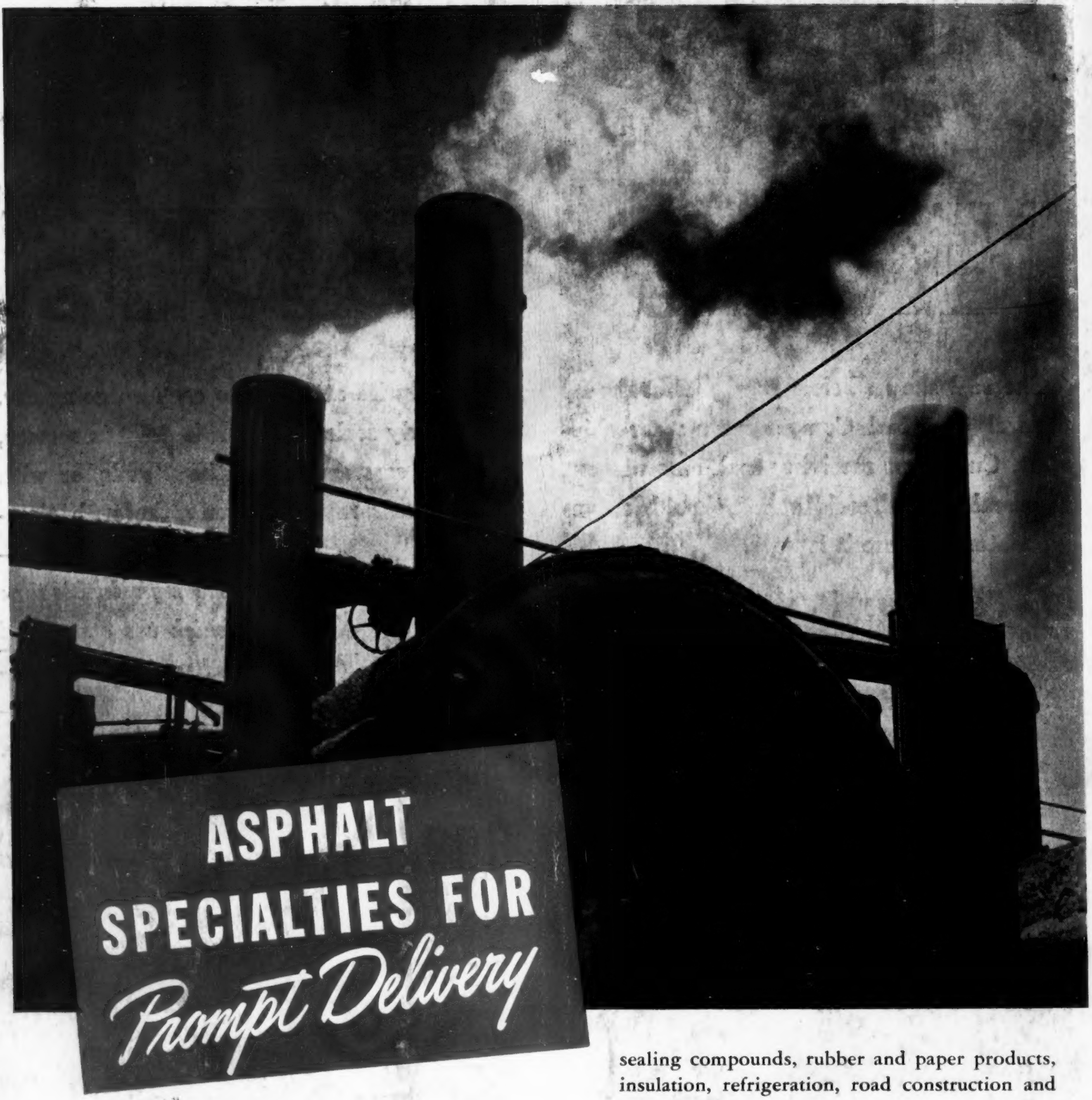

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